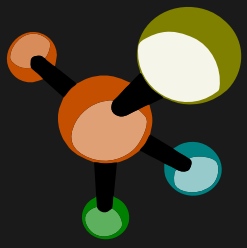
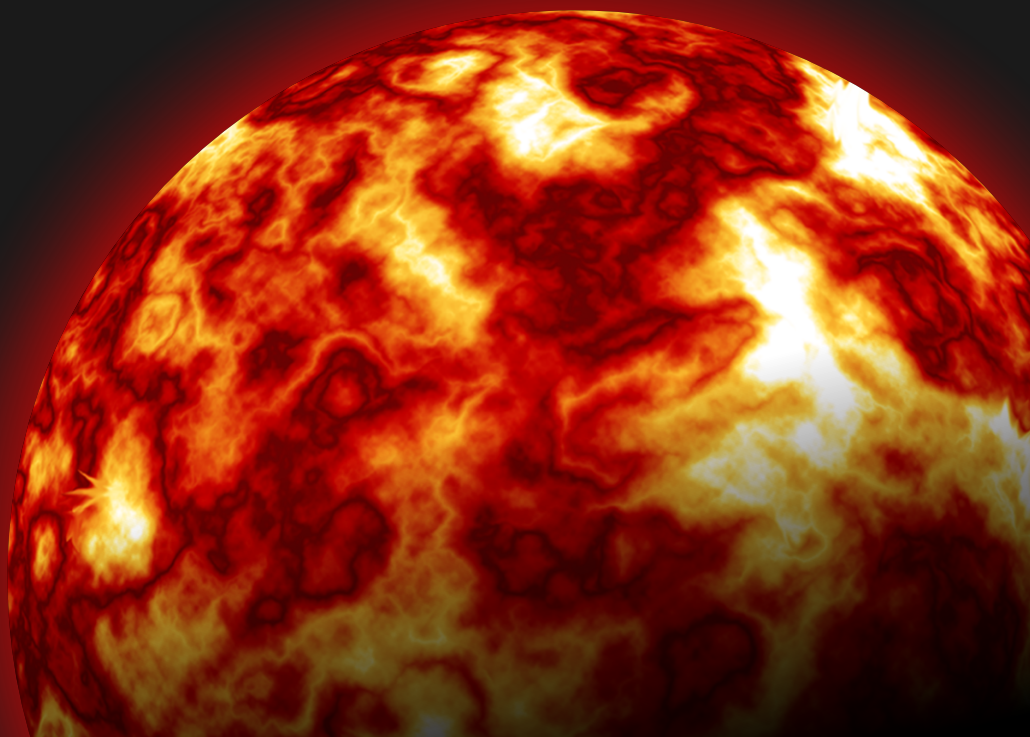
Introduction to
VAIDIC PHYSICS
(A Glimpse of *Ved Vigyan Alok*)



Vishal Arya



‘Om’

Introduction to
VAIDIC PHYSICS

(A Glimpse of Ved Vigyan Alok)

Author

Vishal Arya (Agniyash Vedarthi)

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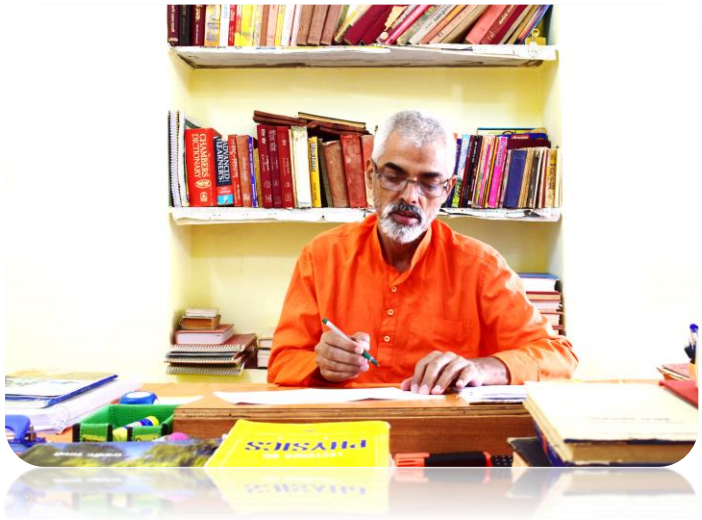
☙ Sincerely Dedicated To ❧



With full devotion and sincerity, I dedicate this book to my *Rishi* like *Guru* (*Rev. Acharya Agnivrat Ji Naishthik*) in remembrance of my grandfather Late *Shri Mahashya Ikaram Singh Ji Chaudhary*.

Also, I dedicate this book to all scientific geniuses and young brains of this world.

-Vishal Arya

Best Wishes

डॉ. सत्यपाल सिंह
संसद सदस्य (लोक सभा) बागपत, उत्तर प्रदेश
सभापतिः
लाभ के पदों संबंधी संयुक्त समिति

सत्यमेव जयते

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फैक्स : 011-21410294

सं.73/2020-21/91
जनवरी 25, 2021

Best Wishes

It is a matter of delight that dear *Vishal Arya* has written this 'Introduction to *Vaidic* Physics' book as an abridged version of '*Ved Vigyan Alok*' text written by *Acharya Agnivrat Ji Naishthik*. It is indeed a challenging task to read and understand the entire long and complex text and summarize it in your own words.

This compact but precious book not only explains those topics which modern science has not understood but also presents such mysteries of cosmos that have not been touched by so-called modern science. The journey of modern science begins from elementary particles like Photons and Quarks - Electrons etc. but modern science has no answer as to how are these particles formed. In this book, apart from these topics, young scholar, dear *Vishal Arya* has also delved upon fundamental topics like Time and Space, which will be a matter of surprise to students and teachers of Physics. All the chapters, from the structure of space and the explanation of phases before its formation, the creation of elementary particles and quanta, the dark matter and the dark energy, the electrical charge and the mass to Mahapralay (absolute dissolution) will be a matter of curiosity for all.

I hope that this book will be helpful not only for students and teachers but also for scientists in unravelling the deep mysteries of the cosmos. Also, I congratulate and wish the author for his exemplary work.

25/1/2021
(डॉ. सत्य पाल सिंह)

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Consents

Dr. Bhoop Singh
Retd. Associate Professor, Physics
Bhiwani (Haryana)

This book is a summary of important points of ***Ved Vigyan Alok*** text of *Acharya Agnivrat Ji Naishthik*. Composed by young scholar *Sh. Vishal Arya*, this book has been intended to introduce *Vaidic* Science to students of senior secondary to graduate level, however, due to the guidance provided by *Vaidic* Science on many unsolved mysteries of modern science, this book will certainly be useful for scientists of any level.

Before reading the book, I have a suggestion. If you accept the cause-effect theory and also accept that any effect will have three causes-material cause (*Upadan Karan*), instrumental cause (*Nimitta Karan*) and helping cause (*Sahayak Karan*), then this book can explain from subtlest activity to formation of the cosmos and from formation to the destruction of cosmos clearly, accurately and with certainty.

Out of the three fundamental questions: 'Why', 'How' and 'For Whom', modern science tries to answer only 'How' and that too it does not provide the conclusive answer with certainty or without any doubt. 'Why' and 'For Whom' are out of the ambit of modern science. It is very clear that without knowing 'Why' and 'For Whom', the chances of 'How' being misused are high and in reality, it is happening at present. *Vaidic* Science provides conclusive, accurate and certain answers to all the three fundamental questions, hence, the possibility of misuse of *Vaidic* Science is negligible. Certainly, being beneficial of *Vaidic* Science is to be excellent and complete as compared to modern science.

If you do not accept the cause-effect theory, just like modern science ignores the instrumental cause (*Nimitta Karan*) and 'For Whom', then this book will not be useful for you and you may choose to ignore the book.

Ved Vigyan Alok text uncovers the science in the *Veda* elevating *Vaidic* Science at a reputed position will be beneficial for not only humans but also for the entire living ecosystem. This book is a step in this direction. Young scholar *Vishal Arya* is worthy of applause for this hard work. We must promote this book from an individual level to the institutional level and contribute towards the welfare of human beings.

-Dr. Bhoop Singh

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Dr Sandeep Kumar Singh

Scientist and Professor
JK Lakshmipat University, Jaipur

Since childhood I believed in the ancient *Bhartiya* '*Rishi*' system. But due unavailability of proper guidance and due prevalent western influence in society, I completed my studies in modern science and became a scientist in Sweden.

But, while working in Sweden, I became worried as I was unable to foresee any permanent solution on global issues such as climate change, pollution, energy crisis, the origin of the universe etc. But luckily, I had a chance to meet *Acharya Agnivrat Ji Naishthik* and after reading the scientific explanation presented by *Ved Vigyan Alok*, paved the way for identifying solutions to these, by taking the science of both living and non-living together. I took a pledge to promote the scientific explanation of *Aarsh* texts all my life. I was introduced to *Vaidic* Physics by the *'Vaidic* Physics' YouTube channel only at the age of 35 in Sweden, but it is a wonderful opportunity for students like you to have such great information in lucid language through this handy book at such a young age.

Dear *Vishal Arya* aptly deserves felicitation for his hard work to compose the summarized version of *Ved Vigyan Alok* text. Every chapter presents a new topic with diagrams and images and inspires research into new horizons. This book will help students (from 11^{th} to MSc.), scientists, social thinkers, religious teachers and common people to excel in their field. I firmly believe that this book will be a game-changer for the world. I have read this book many times and every time I found something new to learn. After reading *Ved Vigyan Alok* and this book, I too am working on 'Green Technology' which will be free from any ill-effect.

-Dr Sandeep Kumar Singh

❋ ❋ ❋ ❋ ❋

Dr Satender Kataria
Materials Scientist,
RWTH Aachen University, Germany

It is an honour for me to write about the book which is the first of its kind on '*Vaidic* Physics' by *Vishal Arya* based on '*Ved Vigyan Alok*' by ***Acharya Agnivrat Naishthik Ji***. The book is definitely a great effort to bring forth the fundamentals of Physics which have been seriously lacking in the curriculum of modern science books and even in professional specific areas of fundamental research. This bring forth the scientific knowledge in a very simple manner for common readers embedded in our *Veda*-s, and which was lying dormant due to various unwanted reasons like cruel *Mugal* invasion and demonic British era which did their best to destroy the well-established *Gurukul* education of *Bhārata*. *Gurukul* education involved all spectrum of human life in this materialistic world to the 'experiencing' the ONE and *Veda*s were the foundation of their curriculum. After independence, GoI also did a lot of damage to our education system and destroyed the very foundation of a 'Once Golden *Rashtra*' *Bharat* by bringing in unethical laws against the indigenous *Bhartiya* people. Now, we all are products of English made deteriorating education system. It is only when you read our educational literature, you come to know the *Sanatan Vidya* enshrined in *Arya Bhoomi Bharat*.

The presented course in this book is based on '*Vaidic Rashmi* Theory' proposed by ***Agnivrata Ji*** after years of uninterrupted hard work on the scientific interpretation of *Aitaraiya Brahman*. It unfolds the Creation of the Universe through *Rashmi* theory in a very systematic manner and debunks the suspicious big bang theory. It proposes the non-existence of Black Holes and explains what is Dark Matter (~95% of the Universe consists of this, as per modern science!)

The book takes the reader through the various fundamental forces existing in nature specifically gravitation, the origin of which is still a mystery for western (wasted!) science. It introduces the charges and what

is the origin of attractive and repulsive forces like gravitation and frictional forces. A chapter is dedicated especially to gravitational force, which is very well thought and analysed. Such knowledge is of utmost importance in various fields of scientific research spanning from the formation of the Universe to the functioning of the human body. The chapter on photons and other elementary particles are very intriguing and interesting as it unfolds the mystery of the existence of photons and other elementary particles. A very clear proposal is made on the absorption and emission of photons. This is a very hot topic of research that involves light-matter interaction and forms the backbone of existing information technology.

Electromagnetic waves are then described in detail with their formation and motion in space without the aid of complex modern mathematical equations. Till now it is told to us that nothing can travel faster than light. But it is interesting to read in this book, there are *Dhananjaya Rashmi* which indeed travel faster than light! Being a modern material scientist and having knowledge of current research topics, I can say that such a claim has the potential to be researched upon. Last but not the least, the process of *Mahapralaya* (Final Destruction of the Universe) is touched upon. It happens or not in our lifetimes but we all should know the physical process behind this to have complete and true knowledge of the Universe, we live in.

It should be remembered that modern technology has its own limits to observing materials or things. For example, electrons are used to see the atomic structure of materials in a transmission electron microscope. But, if one wants to see an electron, what should be used? This is where western science stops, and nobody knows what to do next? So, if one wants to observe a subtle thing, the probe should be smaller. Now, the world is moving towards quantum technology where quantum states, which are not clear yet, will be used to create new technologies. Therefore, it is important for students and researchers to first understand the true nature of materials, atoms, electrons and other elementary particles. The present book will definitely be a founding stone in the history of modern confused science.

From its first draft, I could feel the very depth of the fundamentals of physics, the science of everything we see around, which this book provides. At this stage, it does not put forth any mathematical formulations

to prove all that is said. But we should not forget everything starts with a theory and hypothesis. The book provides an open playground to all students, young and old generations of researchers for helping them out to resolve some of the most fundamental questions of human beings. I personally have learnt a lot from this book and my connections with *Acharya ji* and *Vishal*. I am sure that this is just the start of reviving our millennia ever-green true knowledge which once flourished in *Mahan Bharat*.

I wish all the success to the book and truly appreciate the dedication of all who are involved selflessly in making this.

-Dr Satender Kataria

❊ ❋ ❋ ❋ ❊

TRANSLATOR'S NOTE

Pranava Priya Dwivedi
MBA (IBS), BMS (Lucknow University)

It is a privilege and an honour to work on such a great book. Since I have translated the book, I had to read each word to find its meaning in the larger context and hence, can comment that it provides a new perspective in the domain of Physics. It asks questions and also provides simplified answers to some of the unanswered questions by modern science.

Though I have tried to keep the meaning of the terms in English as close as possible, even then, some errors may have been overlooked. I humbly request all readers to share their feedback with us, so we can improve the book in the next edition.

I would like to thank *Acharya Agnivrat Ji Naishthik* for providing this opportunity to me and I am grateful to *Vishal Arya* for his continuous support and guidance.

❋ ❋ ❋ ❋ ❋

Contents

Foreword

Since birth humans or any intelligent animal-like humans have always been curious about this universe. What is it? How is it formed? How does its function and how does it end? Within the science of the universe, exists anatomy, botany and the science of all celestial bodies. According to the *Bhārtīya Sanātana* belief, *Veda* is as old as humans or any other similar intelligent animal on any other planet. *Veda* is a universal text, which remains the same for the entire *Sṛṣṭi*. *Veda* is a specific group of mantras whose vibrations produce this cosmos. Hence, the comprehensive knowledge that humans can acquire about the cosmos from *Veda*, can never be acquired anywhere else. *Veda* is the creation of that same *Cetana Sattā* (supreme conscious entity) which creates and manages the cosmos. Due to this reason, there is perfect coordination between the *Veda* and the cosmos. The same has been written by ***Maharṣi Vedavyāsa*** in ***Brahma-sūtra*** as follows-

***Tattu Samanvayāta* (1.1.4)**

The knowledge in *Veda* is completely pure and precise. Basis this, language and knowledge in the world have emerged. Language and knowledge are not a result of any hypothetical development. For this one should read my book '***Ved Vigyan Alok***'. Because of this knowledge, not only the humans of the ancient world were happy and prosperous, but also all living beings lived happily. But in history, wherever we find episodes of cruelty, sadness, incest etc., those were due to misunderstanding of knowledge of *Veda* in totality. Until the *Mahābhārata*, which is roughly 5000 years ago, *Bhārata varṣa* (earlier known as *Āryāvarta*) was prosperous with full of knowledge, money and property and was considered as *Jagadguru* or *Cakravartī*. It is also a fact that some centuries before *Mahābhārata*, the social structure became fragile due to the mis-representation of *Vaidic* knowledge and many evil practices had emerged. Even then, the source of knowledge for the entire world was *Veda* only.

Neither a single sect nor their holy books existing today were present at that time. Unfortunately, after *Mahābhārata*, such destruction took place in the world that *Vaidic* knowledge slowly began to vanish, new sects emerged leading to a division in humanity. Despite this, many prominent scientists were born during the medieval period like *Āryabhaṭṭa*, *Varāhamihiri*, *Bhāskarācārya*, *Brahmagupta, Nāgārjuna, Caraka, Sushruta* etc. After this, modern science came. We can consider it to begin from Copernicus and Galileo. Since then, so-called modern highly developed physics has been ruling the world, which not only ignores the *Vaidic* knowledge and medieval scientists but also condemns it.

Although we do not hesitate to acknowledge that modern scientists have done really hard work and are still doing it, but should we not realize the fact that any technique built on western science has ill effects? Is there any medicine that has no side effects? Today, water, earth, air, space and the *Manas-tattva* all are polluted. Is there a place on the earth where one can be healthy and happy? Is it not evident from these that the western scientific system has some fault due to which all humans and all living beings are on the verge of extinction?

In our view, the main reason is that modern science does not try to understand the cosmic material in totality. It completely negates the existence of a conscious entity without even thinking about it. Hence it is stuck in various issues in different areas. But its stubbornness and ego block its thought process about a conscious entity. Moreover, considering themselves supreme, humans are making science a business hence there are uncontrolled and unnecessary innovations happening around and some cunning people are fooling other people to satisfy their self-interest. This way modern science has become a tool in the hands of selfish and devil-minded people which is detrimental for the entire humanity and living world. Today this tendency is continuously increasing and none 'so called' learned people have the capability to think in this direction.

In western physics, many false inferences are being developed due to the insistence on mathematical explanations and proving everything by experimentation and observations and absence of '*Uhā*' and proper logic. Even 'Nobel prize' is being awarded for such false inferences continuously and opposite theories are being awarded a lot of biases. Science is

considered as dynamic in nature by the activity of disproving the theories and the vicious circle of disproof. It is a matter of surprise that blind faith and misconceptions in the name of science are extensive in the entire world. From *Vaidic* perspective, science is another name for the truth and it is unchangeable. If there is any change then it means that the truth was not understood well. But a changing fact cannot be the truth.

Through this book, dearest scholar *Vishal Arya* (*Agniyash Vedarthi*), who has deeply studied my voluminous and complex text '*Ved Vigyan Alok*', has presented some of the finest gems from it in front of you. This book will present a new direction of thoughts in understanding the cosmos, to not only the students of Physics but also to all scientific geniuses and scientists. I hope that this book will serve as a primary guide to understand the unsolved and deep mysteries of modern physics which, modern science is unable to answer even after wasting millions of dollars. This book will take the present scientific community towards real knowledge about the cosmos and also will indicate to know and understand the properties and powers of a conscious entity, which will inspire modern science to become perfect from the present state of imperfection.

It is to be noted that science based on imperfection which is being proved to be destructive for the world, will benefit humans and all living beings once it begins moving towards perfection. The other benefit of this book is that it will instill national self-respect and shed light about true science in the minds of the educated youth of *Bhārata*, which is moving towards blind-faith of 'scientific atheism' and is not only ignoring the glorious past of *Bhārata* but also condemns the culture and traditions, and has lost the self-respect completely. This book will lead to the rise of real patriotism in the minds of youth which will help the learned community to establish *Bhārata* as *Jagadguru* once again. We should also understand that patriotism does not mean to oppose another nation without a reason, but it is in our culture that we consider the entire world as our family. This was the main feature of *Bhārata* being a *Cakravartī*. Our country has never been imperialistic, instead has always been a propagator of universal brotherhood. Through *Vaidic* Science we will try to regain that lost glory of *Bhārata*.

In the end, I would like to thank and bless the writer of this book *Vishal Arya* from bottom of my heart and request all readers to read the book thoroughly without any prejudices; later compare the fact presented in this book with that of modern science and then choose whichever they find suitable as per their conscience. For those who want to have a deep understanding of the topics, for them, *Ved Vigyan Alok* is a must-read.

I am hopeful that this book will illuminate the minds and hearts of the readers which will help in removing the darkness inside us. With these hopes, 'may God provide us strength to be a truly human and provide us real scientific intelligence'…

-Acharya Agnivrat Naishthik
Chairman, *Shri Vaidic Swasti Pantha Nyas*
Vaidic and Modern Physics Research Centre
Ved Vigyan Mandir, Bhagal Bhim, Bhinmal, Rajasthan

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Preamble

My objective to write this book is to introduce *Vaidic* Physics, which exists since the beginning of the cosmos and which was discovered and preserved by our *Ṛṣi*-s, to not only my loving county *Āryāvarta* but also to all the youth of the world who are our future.

I wrote this book based on the text *Ved Vigyan Alok*, written by my honourable ***Guru Acharya Agnivrat Naishthik Ji*** after 10 years of hard work and which is the scientific interpretation of *Aitaraiya Brāhmaṇa* (approx. 7000 years old) of *Ṛgveda*. The topic of this text is 'Creation of Cosmos'. It consists of the science of the formation of *Prakṛti* from elementary state to the stars.

Generally, students avoid studying physics as they find the complexities of mathematics a little difficult. Hence, those students who are poor in mathematics, but are brilliant and are keen to study about cosmos, are unable to study physics. It is a flaw in the western education system. On the other side, any person who knows little math, but has logical reasoning capabilities can understand cosmos to such depth where western physics takes centuries to reach. In reality, science is only one, which is the same at all places and at all times. But it has been presented in various forms due to differences in the capabilities of humans and its explanation at various periods. Hence, in this book, we are referring to western science.

No reader should conclude that the expanse of *Vaidic* Physics is limited to what is presented in the book. Those keen to know further should read *Ved Vigyan Alok*. Additionally, it is also true that *Ved Vigyan Alok* too does not completely define the entire cosmos as no human is complete it. There are many texts on *Vaidic* Physics but their scientific interpretation is still to be done. Hence, at the moment, readers can read this book and *Ved Vigyan Alok* and gain information that can take them much ahead of modern physics. There is a playlist named '*Ved Vigyan Alok* Classes' on

our YouTube channel '*Vaidic* Physics' having several videos and you can watch them know more. In future also we will keep making more such videos on these topics.

In the end, I would request all my brilliant readers to read the book carefully without prejudice, and try to develop mathematical calculations and experiments based on it and, slowly try to explore the possibilities of developing technology on it. Together we all must establish this great *Vaidic* Physic in the world for benefit of mankind as it has the solution to almost all critical issues of the world.

Note: If readers want to extract the maximum benefit from the book then they should try to answer the questions and perform activities as given at the end of each chapter.

Note of thanks

At the outset, I am heartily grateful to my Rev. *Guru*, as all the science in the book is from his text *Ved Vigyan Alok* only which he has presented to this world. I have presented some main points from the text in form of this book. You have always been inspiring and guiding me in writing this book.

In this context, specific motivation has also been from ***Shri Ashok Ji Arya***, Executive Chairperson, *Shrimad Dayanand Satyarth Prakash* Trust, *Udaipur*, who asked that there should be a lucid and concise book on *Vaidic* Physics too, which can be understood by students of higher secondary classes. Likewise, I have been inspired and motivated by Chief Patron of *Shri Vaidic Swasti Pantha* Trust, Honorable ***Shri Satyapal Singh Ji***, Vice-Chancellor, Gurukul Kangri University, Haridwar, Member of Parliament, *Baghpat* (UP), former Minister of State for Higher Education, Government of *Bhārata* (India) and former Commissioner of Police, Mumbai Police, who has sent his blessings and made me grateful and I always receive his love and affection. Additionally, the Deputy Chief of the same trust, Honorable ***Shri Deen Dayal Ji Gupta***, Kolkata, Secretary to the trust Honorable ***Shri T.C. Damor***, Udaipur and Head of *Sarvadeshik Arya Pratinidhi Sabha*, Honorable ***Shri Suresh Chandra Ji Arya*** have always been motivating me. I, from my bottom of my heart, thank all these

and all other trustees of *Shri Vaidic Swasti Pantha Nyas*. They have been continuous support to me.

Further, I am heartily grateful to father-figure Honorable **Dr *Bhoop Singh Ji***, Rt. Associate Professor, Physics for providing important suggestions, feedback and evaluating the book and to my elder's **Dr *Sandeep Kumar Singh Ji*** and **Dr *Satender Kataria Ji***. In the end, I express my heartfelt gratitude to the translator of this book, ***Shri Pranav Priya Dwivedi Ji***, who worked very hard in the translation of this book and ***Br. Om Ji***, ***Br. Mahivrat Krishnaram Ji*** and ***Br. Shravan Ji*** (Members of *Vaidic Kranti Dal*), who contributed greatly to this translation.

-Vishal Arya

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TRANSCODE

अ	आ	इ	ई	उ	ऊ	ऋ	ॠ
a	ā	i	ī	u	ū	ṛ	ṝ

ए	ऐ	ओ	औ	अं	अः
e/ē	ai	o/ō	au	aṃ	aḥ

क	ख	ग	घ	ङ	च	छ	ज
ka	kha	ga	gha	ṅa	ca	cha	ja

झ	ञ	ट	ठ	ड	ढ	ण	त
jha	ña	ṭa	ṭha	ḍa	ḍha	ṇa	ta

थ	द	ध	न	प	फ	ब	भ
tha	da	dha	na	pa	pha	ba	bha

म	य	र	ल	व	श	ष	स
ma	ya	ra	la	va	śa	ṣa	sa

ह	ळ	क्ष	त्र	ज्ञ
ha	ḷa	kṣa	tra	jña

CHAPTER 1

Definitions

At the outset, let us understand the meaning of essential terms so that one does not face difficulty comprehending the subsequent chapters.

Vaidic Raśmi Theory (VRT)

VRT is a branch of physics that deals with the study of properties, processes and formation of elementary particles and space from various types of *Chanda Raśmi*s (or vibrations). Additionally, this theory also helps to explain the process of the formation of stars since the creation of the cosmos. The foundation of this theory lies in the *Aitaraiya Brāhmaṇa* text of *Ṛgveda*. *Vaidic* Scientist ***Acharya Agnivrat Naishthik*** decoded it and has published it in his book ***'Ved Vigyan Alok'***, after years of rigorous hard work, a task that has been done after several thousands of years. As a result, this theory is more logical and comprehensive than any other theory of modern physics.

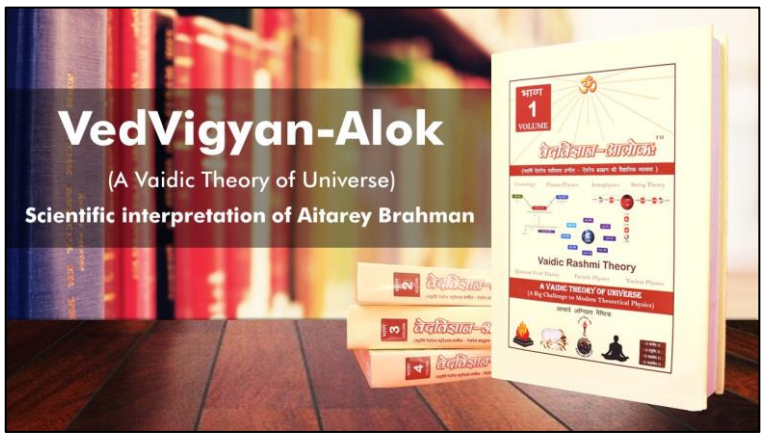


Figure 1.1 *Ved Vigyan Alok*

What is *Raśmi*?

According to ***Maharṣi Yāska***, any subtle vibration that generates and controls a comparatively gross vibration is called '*Raśmi*'. The subtlest *Raśmi* is the *Parā* ***'Om'*** *Raśmi* that disturbs the equilibrium of the ***'Prakṛti'*** (fundamental state of matter and energy) which has three properties, i.e. *Satva, Rajasa and Tamas.*

The entire cosmos (all particles and space) is formed and controlled by these *Raśmi*s. Any *Raśmi* is much smaller than the waves presently known by modern physics.

Four forms of *Vāk Raśmi*

1. *Parā*

Parā vāṇī[1] is fundamental and subtlest among all *vāṇī*s. The subtlest, omnipresent, exists in the absolute latent (imperceptible) form, is in maximum quantity, can bind everything to itself but itself remains free and is of the highest order. The ears cannot hear this subtle sound. It exists in the entire cosmos in the subtlest form and integrates each particle with itself. *Yogī*s of a very high level can only feel it. Any modern scientific technique cannot observe it. The *Vaikharī* sound that a person hears or speaks is generated or received by *Ātmā* in *Parā* form only. *Prakṛti* acts as a transmission medium for this wave.

2. *Paśyantī*

Paśyantī vāṇī is grosser than *Parā* and subtler than *Madhyamā*. It is like a seed, providing the form to the *Varṇa*s (alphabets or characters). *Paśyantī Vāk* forms in *Manas-Tattva*, which is its base and transmission medium too. All *'Prāṇa'* and *'Chanda' Raśmi*s originate from this '*Vāk Tattva*' in the *'Manas-Tattva'*. It is possible that in future, we can detect these sound waves through a micro level technique. Whenever one hears a sound through the ears, these vibrations reach the brain and then to *Manas-Tattva* through the nerves of the ears. These vibrations contain the *'Varṇa'* (alphabets). The brain, with the help of '*Mana*', identifies the *'Varṇa'*. We cannot hear this *'Paśyantī'* sound through ears, but *Manas-Tattva* can visualize it via the brain.

[1] is a subtle form of soundwave

3. *Madhyamā*

Madhyamā form of *Vāk* is considered grosser compared to *Paśyantī* but subtler than *'Vaikharī'*. The characteristics of '*Varṇa*' in this state are more expressed or grosser than *Paśyantī* but subtler than *Vaikharī*. The form of sound created after it hits the eardrum is called *Madhyamā*. It is the *vāṇī* that travels in between the ear and the brain. The transmission medium of this *vāṇī* is *'Ākāśa*' or the space.

Activity

Try to understand how our ears convert the sound waves into an electrical signal and what happens to these signals after reaching the brain? You can consult a teacher or search for it on the internet.

4. *Vaikharī*

It is the grossest form of sound that we speak or hear. This sound wave travels between the speaker and the listener and, in the end, transforms into *Paśyantī* in the *Manas-Tattva* of the listener. It means that whenever a person speaks, the wave that travels from the mouth of the speaker to our ears is *Vaikharī*, one that travels from ears to brain is *Madhyamā*, from the brain to *Mana* is *Paśyantī* and *Ātmā* (conscious soul) receives it as *Parā* from the *Mana*.

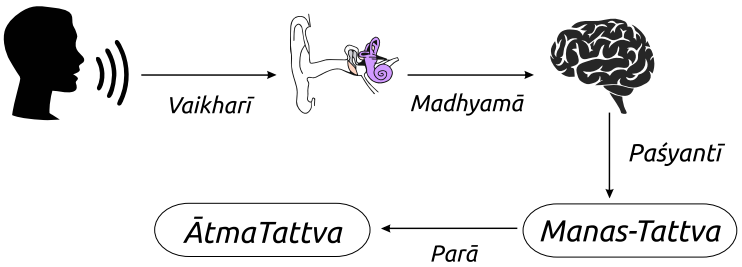


Figure 1.2 Transformation of *vāṇī* (soundwave)

Conversely, while speaking, first, a soundwave is generated by *Ātmā* and

reaches the *Mana*; it is called *Parā*. Then, *Mana* transforms it into *Paśyantī* and transmits it to the brain. Next, the brain transforms into *Madhyamā* and it reaches the vocal cords via nerves. In the end, the vocal cord converts the *Madhyamā* soundwave into *Vaikharī*. The transmission medium for this wave is a gross substance (like solids, liquids and gases). This *vāṇī* propagates in compressions and rarefaction in various mediums.

Here, the transformation of sound occurs just like a microphone converts the sound into an electrical signal and again converts back into sound in a loudspeaker

Figure 1.3 Transformation of sound by Microphone

Vāk

In layman terms, it means soundwave. It is that first vibration generated by the Conscious Entity in the fundamental causal material cause of the cosmos. We have already defined it as *'Parā'* earlier. These subtle sound vibrations or *Raśmi*s control the formation and the functioning of the cosmos. One cannot imagine a vibration or fluctuation before this. All other *Raśmi*s are different forms of this fundamental vibration.

Chanda

*Raśmi*s that enfold (or cover) and provide subtle force are called *Chanda Raśmi*s. All *Raśmi*s in this world cover some or the other thing and provide force. Hence, these are called *Chanda Raśmi*s. These *Raśmi*s are a form of *Vāk*. In the cosmos, these *Raśmi*s behave as female with respect to *Prāṇa Raśmi*s.

Prāṇa Raśmis

Those *Raśmi*s that provide subtle force, motion and light are called as '*Prāṇa Raśmi*'. All properties of *Chanda Raśmi*s are present in *Prāṇa Raśmi*s and vice versa. Due to this, these are also a special form of *Vāk Raśmi*. They have a special affinity towards *Chanda Raśmi* and behave as males with respect to them.

Marut Raśmis

Smaller *Chanda Raśmi*s are called as '*Marut Raśmi*s'. These *Raśmi*s also have an affinity towards *Prāṇa Raśmi*s and behave as female with respect to them. These *Raśmi*s travel in a group.

Soma

These are a form of *Marut Raśmi*s and exist in latent or unexpressed form. Various electromagnetic waves and electrically charged rays absorb these '*Soma Raśmi*s' while travelling in space. These *Raśmi*s have very low temperature.

Ūrjā (Energy)

One which has both force and motion or one that has the capability to do work is called *Ūrjā*. [*Ūrja BalaPrāṇanayoḥ*]

Nimitta Kāraṇa (Instrumental Cause)

It is the one that can create and whose absence ceases the process of creation, which means the conscious entity behind any work or activity is 'Primary *Nimitta Kāraṇa*'. Apart from it, the other means that help in the execution of the work or activity are the 'Secondary *Nimitta Kāraṇa*' (Helping Cause). E.g. In designing the gold ornaments, the goldsmith is the 'Primary *Nimitta Kāraṇa*', while the tools and the customers are the 'Secondary *Nimitta Kāraṇa'*.

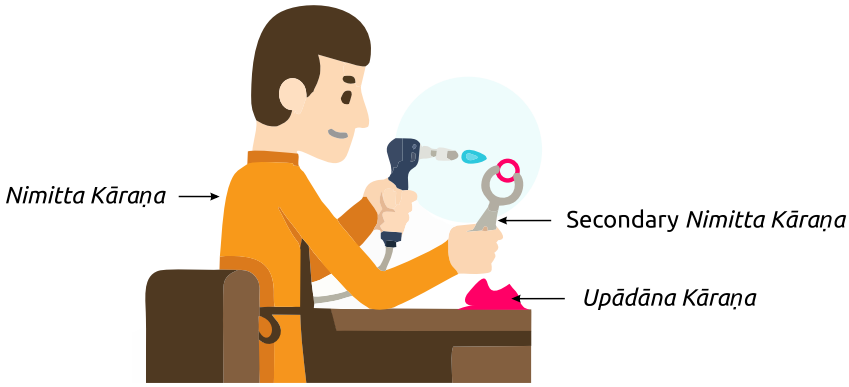


Figure 1.3 *Nimitta*, Secondary *Nimitta and Upādāna Kāraṇa*

Upādāna Kāraṇa (Material Cause)/ *Samavāya Kāraṇa*

The source or the material used in creation are the *'Upādāna Kāraṇa'* or

from which material the creator construct any other material/substance is called *'Upādāna Kāraṇa'*. *E.g.* In designing gold ornaments, gold, silver etc. are the material cause (*Upādāna Kāraṇa*), i.e. the sources to make ornaments.

Vidyā (Knowledge)

Vidyā is that which helps us to know fully an object or material 'as it is' and accordingly helps us to use it for the benefit of all and make everyone happy.

[*Vyvahāra Bhānu* by *Maharṣi Dayānanda Sarasvatī]*

Vijñāna (science)

Making wise use of *Jñāna*, *Karma* and *Upāsanā* and from acquiring exact true knowledge about *Īśvara* to the material *(Prakṛti)*, using them suitably is called as science.

[*Veda Viṣaya Vicāra*, *Ṛgved-ĀdiBhāṣyaBhūmikā*, *Maharṣi Dayānanda Sarasvatī*]

It is evident from above that any knowledge that is harmful to anyone in the short or long term cannot be termed as *Vidyā* (knowledge) or *Vijñāna* (science).

Padārtha or *Tattva* (Material)

'Padārtha or *Tattva'* is that which has an existence in reality. According to ***Maharṣi Kaṇāda***, any form of physical material, its properties, actions, reactions, composition etc. are all *'Padārtha'*. Conscious-entity, *Mana*, *Kāla*, *Diśā* and their properties and actions too are all *Padārtha*, i.e. everything that exists in this world is termed as *'Padārtha* or *Tattva'*.[2]

❋ ❋ ❋ ❋ ❋

[2] In this book, we are considering ion/atoms to grosser material as substance/matter.

CHAPTER 2

Why is it necessary to know about the Cosmos?

The things that we observe around us day and night, the earth and entire material in it and on it, earth-like planets, their satellites, various stars, millions of galaxies, whatever we see, and those other objects we cannot see are part of this cosmos. Human, since ancient times, has always tried to learn more about them. Now the question is, why is it important to know about the cosmos? To answer this, let us try to understand what material this world is made of?

2.1 The fundamental cause of the Cosmos

The world is made up of two elements-

1. The fundamental material which constitutes this cosmos, i.e. the material that is the Material Cause (*Upādāna Kāraṇa*) of this cosmos and,
2. Those which are not the material cause but are only the Conscious Entities (*Nimitta Kāraṇa*).

The first is non-living materials, while the second category has non-living and conscious entities. While defining 'Cosmos' in *Āryoddeśya-ratnamālā, Maharṣi Dayānanda Sarasvatī* writes-

"When the fundamental material undergoes specific synthesis which is initiated by a doer, is presently worthy and usable in various forms is called 'Sṛṣti' (cosmos).

Again in *'Svamantavyaamantavya-prakāśa' Maharṣi Dayānanda Sarasvatī* writes-

"The intelligent and rational interaction of different materials leading to various forms is called as Sṛṣti (cosmos or creation)".

We can summarize two definitions as below-

1. Humans can acquire scientific knowledge about the formed materials of creation and can use them. Without scientific knowledge, it is impossible to use material wisely. Hence, in this world, the knowledge of material science is essential for everyone. The cosmos is not disdainful but to be used wisely for everyone's welfare. Therefore, one should know all the materials of the cosmos, i.e. from micro particles and even the more subtle *Prāṇa Raśmi*s etc., to the biggest and heaviest stars and other celestial bodies, and use the information for everyone's (all living beings) well being. All this is the purpose of the cosmos.

2. Cosmos has been created from the basic material cause. This causal material is eternal and infinite. It can never be created nor be destroyed. It always exists. It is not 'nothingness' or non-existent, like the great ***Maharṣi Kapila*** had said-

'Nāvastuno vastusiddhiḥ' (*Sāṁkhyā Darśana* 1.78)

Means: Nothingness cannot create something. The same has been said by the great *Vaidic* Scientist *Yogeśvara Śrī Kṛśna*-

'Nāsato vidyate bhāvo, nābhāvo vidyate sataḥ' (*Gītā* 2.16)

Means: the non-existent never exists, and that which exists never gets destroyed. It implies that nothing can be created out of 'nothingness' and an existing object can never be destroyed completely. In the world, whatever we observe and listen to as the destruction of the existing and creation out of nothing is simply-

'Nāśḥ kāraṇalayaḥ' (*Sāṁkhyā Darśana* 1.121)

Means: destruction is the conversion of an object/material into its subtle or elementary form. In this case, the object does not become non-existent but disintegrates into very subtle entities that are not observable by physical means; it is called the destruction or the *'Pralaya'*.

On the contrary, when these invisible, untouchable or unobservable entities

combine to create a visible and observable form, it is known as the creation. In reality, creation and destruction are the two states of the material. It is to be noted that creation-destruction and cause-effect relation are relative states. One object can be a material cause for the other object, while at the same time, it can itself be an effect (*kārya-rūpa*) for other subtle entities. For example, 'molecules of water' are the material cause for 'water', while the 'atoms of Hydrogen and Oxygen' are the material cause for 'molecule of water'. Likewise, water molecules are the material cause for water but are the effect of atoms of H_2 and O_2.

2.2 Cosmos: an intelligent design

The cosmos is made up of a 'specific combination' of various subtle entities. Here the word 'specific' implies that the combination is not random but is an intelligent, rational and organized combination. If we observe any randomness or chaos in the world, it is only due to our limited knowledge and understanding; even in that chaos, there is a fantastic and purposeful process, which we cannot comprehend due to our limited comprehension abilities.

The entire cosmos is systematic, logically created and is functioning purposefully and objectively. All that we can comprehend or cannot comprehend works under established principles and laws also created accordingly. There occurs no activity in this world that is not as per the law. However, it is entirely different that we cannot understand those laws and processes in totality. The same was agreed to by the American scientist Richard. P. Fineman –

Figure 2.1

"We can imagine that this complicated array of moving things which constitutes the world is something like a great chess game being played by the Gods, and we are observers of the game. We do not know what the rules of the games are; all we are allowed to do is to watch the playing. Of course, if we watch long enough, we may eventually catch on to a few rules. The rules of the game are what we mean by fundamental physics. Even if we knew every rule, however, we might not be able to understand why a particular move is made in the game, merely because it is too complicated and

our minds are limited."

[Page - 13, Lecture on Physics]

It implies that this entire world is like God's game. All the laws of physics are the rules of that game. We cannot know all of them. We can only observe and feel them. We cannot create those laws. The more laws we know, the more our science can be considered developed. As our brain has limited capacity, it cannot fully comprehend the complex laws of creation. Understanding the laws of the cosmos depends on the mental capacity of the person trying to understand and the technical resources he/she has access to. Due to this reason, research in physics will continue forever.

According to the *Vaidic* Science of *Maharṣi Aitaraiya Mahīdāsa*, all creation activities are started and conducted in a phased and systematic manner according to the definite order and arrangement. There is nothing in this cosmos that is formed randomly and casually. The formation of elementary particles, stars, various waves and particles, various nebula, the creation of atoms, molecules, and all other objects is organised under the defined laws and follows a set pattern. All the constituents necessary for the cosmos are also created in steps as per the guiding laws of the conscious entity (*Cetana Tattva*).

2.3 There is nothing 'uncertain' in the Universe

According to the German scientist Heisenberg, 'it is impossible to measure the momentum and position of a moving particle simultaneously with absolute precision' known as the 'Uncertainty Principle'. From the perspective of *Vaidic* Science, we may not be able to measure some things with certainty, but there is nothing uncertain in the Universe. Any particle or celestial body (stars or planets) follow a proper path and velocity. There is no change in them. If there is any change, it is only for a very short period. Otherwise, there are chances of mishappening.

The orderly and timely movement of the earth under the stipulated nature's law is an important reason for sunrise and sunset and various seasons. Due to these, any particle or galactic system first rises and then declines, which is the perpetual and universal law of the universe. All heavenly systems, the bodies of the creatures and plants, all movable and immovable objects in this universe follow this established principle. In between this rise and fall, every material moves following certain rules.

In the cosmos, nothing happens arbitrarily. Whatever we observe as arbitrary, in reality, is as per a certain law, but we cannot comprehend it due to our limited aptitude.

The aptitude varies not only among animals but also among humans. One can understand the laws of physics to a limited extent based on his/her aptitude, beyond which everything is random and arbitrary for him/her. An ignorant person will always consider an event by chance, but a wise person and scientist will always try to find a reason behind it.

Today, the world's scientific community is not inventing any new law but is just discovering and learning about the existing laws of the universe. This knowledge is called discovery or science, for which thousands of scientists in the world are doing hard work day and night. If we do not know these laws, it does not mean that the universe is working without principles. Albert Einstein also agrees that-

"Randomness is a reflection of our ignorance of some fundamental property of reality".

[Page - 134, Elements of Quantum Optics by Brice Scott]

Now, as the entire cosmos is purposefully and intelligently designed, it is inevitable that its creator is extremely intelligent, almighty, all-powerful, eternal, formless and omnipresent (exists everywhere).

The one which is constantly changing is called the '*Jagat*' or cosmos. There is nothing in this cosmos that is static or permanent. The one that is static, permanent and flawless is not an integral element of this cosmos. From the smallest particle to the heaviest celestial bodies of this cosmos, all are in continuous motion, and due to this motion, they are constantly changing their form. This change is due to the combination and separation of particles happening everywhere and all the time in the cosmos. Moreover, the cause of this combination and separation is motion, which is also happening sensibly. The systematic and specific knowledge of all the materials of the cosmos, their behaviour and properties in the form of all this combination and separation is called the 'Science of Creation' or '*Sṛṣti Vijñāna*'.

2.4 The scope of *Sṛṣti Vijñāna*

Other than spiritual science (*Ādhyatma Vijñāna*), all other streams of science

are various branches of *'Sṛṣti Vijñāna'*. It can be said that the entire material science comes under the ambit of *'Sṛṣti Vijñāna'*, however in common parlance, the study of the formation of various celestial systems only is called *'Sṛṣti Vijñāna'*. In English, it is termed as 'Cosmology'.

Present scientists know and admit that cosmology is not only very closely related to Solar Physics, Plasma Physics, Astronomical Physics, Astronomy, Quantum Field Theory, and String Theory, but they are all branches of cosmology. Moreover, cosmology cannot be envisioned without Particle-Atomic-Nuclear Physics. The science behind heat, light, electricity and magnetism etc., are also essential to explain cosmology. Therefore, these branches of science are part of cosmology. For all of them, the word 'Physics' is highly appropriate.

Other branches of science viz. Chemistry, Geology, Zoology, Botany etc., are incomplete without Physics; alternatively, Physics is the root of different branches of science. Hence, almost all the branches of modern sciences are part of *'Sṛṣti Vijñāna'*. However, in reality, the entire *'Sṛṣti Vijñāna'* is incomplete without 'Spiritual Science'.

Since the time they were born, human has constantly been trying to learn about the creation and functioning of the cosmos. Even today, humans, wherever they reside on the earth and whether they are educated or not, think about this cosmos at some or the other level. These thoughts vary according to the intellect of the individuals. Sometimes they are restricted in their analysis of the cosmos due to their faith and belief systems of their sects.

2.5 The history of *'Sṛṣti Vijñāna'* or 'Science of Creation'

There is an extensive discussion on the real science of creation in all ancient *Vaidic* texts, including *Veda*, *Manusmṛti*, various *Brahmana* texts, *Mahā-bhārata*, *Sūtra* texts, *Upaniṣada*s etc. Even before the origin of modern sciences, various ideas (related to the science of creation) of thinkers like Aristotle, Plato etc., had emerged in western countries. The fundamental source of all these thoughts and the views of other beliefs and faiths system of India and foreign origins were of '*Vaidic Darśana*' only, which got distorted and spread globally.

Which can be considered as the rise of the modern scientific era begins with Copernicus and Galileo. Later, the age of modern cosmology began with British scientist Isaac Newton. Subsequently, many revolutionary inventions and

discoveries were made in modern sciences until Albert Einstein. Many hidden mysteries of the cosmos were discovered.

During this period, modern science developed very precise and advanced techniques that helped it uncover the mysteries of this cosmos. After Einstein till today, many technologies have been developed. All the engineers and the scientists are working together to understand this cosmos. In the last 200-300 years, modern science has delved much into the universe. Scientists across the globe are working hard together day and night. Even then, any universally acceptable theory could not be established; instead, many opposing beliefs are famed as theories. It is quite surprising that while those scientists confront other approaches, they provide experimental results, mathematical calculations, and evidence to prove their respective theories.

While much effort and money has been invested, scientists have not been able to discover the secrets of the origin of the cosmos and the mysteries; the knowledge of our *Ṛṣi*s (*Vaidic* Scientists) has disappeared gradually and is ultimately lost now. Today, we have the *Vaidic* texts, but no one can explain them. In the subsequent chapters, we will try to learn about some of these mysteries through *Vaidic* Physics.

2.6 Why should we understand the Cosmos?

Now we should learn why it is crucial to know about the cosmos? Can't humans be happy without knowing it? The answer is yes, and we will not be able to live happily without knowing the cosmos. The more we know the cosmos, the happier we become, and this will not be the external happiness, but it can make our mind, body and soul happy, and with that, one can ensure the wellbeing of others too.

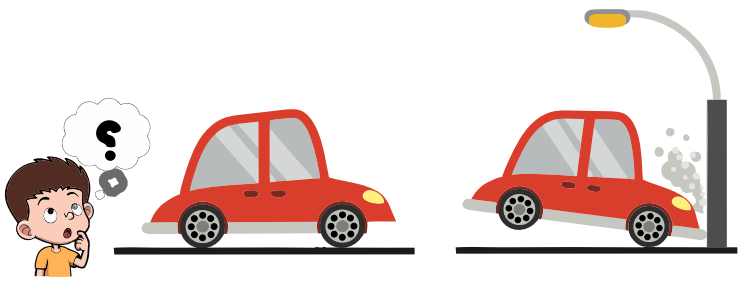


Figure 2.2

Let us try to understand this with an example. Assume that we buy a car and start driving without knowing it, then what will happen? We may meet with an accident and damage the vehicle and our body. Can anyone doubt it? The one who knows more about the car and the rules of the traffic and also follows them, his journey will be more relaxing and convenient. This example is enough to indicate the importance of the knowledge of the cosmos. The more we learn about our body, plants, earth, air, water, sun, moon, electricity, magnetism, heat, energy etc., the more we can benefit from them.

Remember, we are destroying our health and the environment due to inventions from half-baked knowledge of the materials. Like, a driver with half information can cause an accident; similarly, the technology based on partial knowledge is bound to harm somehow. Unfortunately, today's world, which is considered to be hi-tech, has no harmless technology. There is no allopathic medicine with no side-effect; on the contrary, the techniques developed based on theoretical physics in the *Vaidic* age had no harmful effects. Shouldn't we deliberate why was that so?

Figure 2.3

It is because we want ease and convenience and do not focus on in-depth knowledge of material science. Instead, we focus merely on technical innovation. Secondly, we have considered the cosmos as a self-made entity from the random interaction of elementary particles. Finally, we have forgotten that one conscious entity creates and controls all these and the other conscious entity which resides in our bodies and enjoys the entire cosmos. Out of the three, the scientists focused only on non-living material and were trying to bring fortunes

for the human race; therefore, the harm was bound to happen.

Just imagine how a person would behave if he neglects his family members mother, father, brother, sister, wife and children and considers himself supreme and claims entire property? Can he remain happy by troubling others? Unfortunately, the situation of humans is the same today.

Today, man considers himself the supreme consumer of the cosmos and wants to use the entire world; hence, the struggle has increased, and many creatures are becoming extinct. Feelings of love, compassion, kindness have vanished. Therefore, knowing the cosmos in its entirety and behaving accordingly can make humans and other creatures happy.

Activity

Research and write an article on the side-effects of any modern technique (mobile radiation, fertilizers, tractor, cement, medicines etc.) and promote it.

You learnt in this Chapter

- ✓ The world is made up of two factors- One those are the *Upādāna Kāraṇa* (material cause) and the other which are *Nimitta Kāraṇa* (conscious entities).
- ✓ Understanding the actual science of materials of this cosmos and utilizing them for the welfare of all is the purpose of the 'Science of Creation'.
- ✓ The basic material of the cosmos is infinite and eternal.
- ✓ Nothing can be created from nothingness, and no existing thing can be destroyed completely.
- ✓ The cosmos has been created from a due specific combination of subtle

materials tactfully with a special purpose, not by random and purposeless interaction.

- ✓ All the activities of the cosmos are started and conducted in a phased and systematic manner according to the definite order and arrangement.
- ✓ The creator of this cosmos is almighty, all-powerful, extremely intelligent, eternal, infinite and is invisibly omnipresent.
- ✓ All the branches of modern sciences are part of the *Sṛṣti Vijñāna* or Science of Creation.
- ✓ The more we learn about the universe in-depth, the more benefit we can extract from it. Humans cannot be happy without the knowledge of the Science of Creation.

EXERCISES

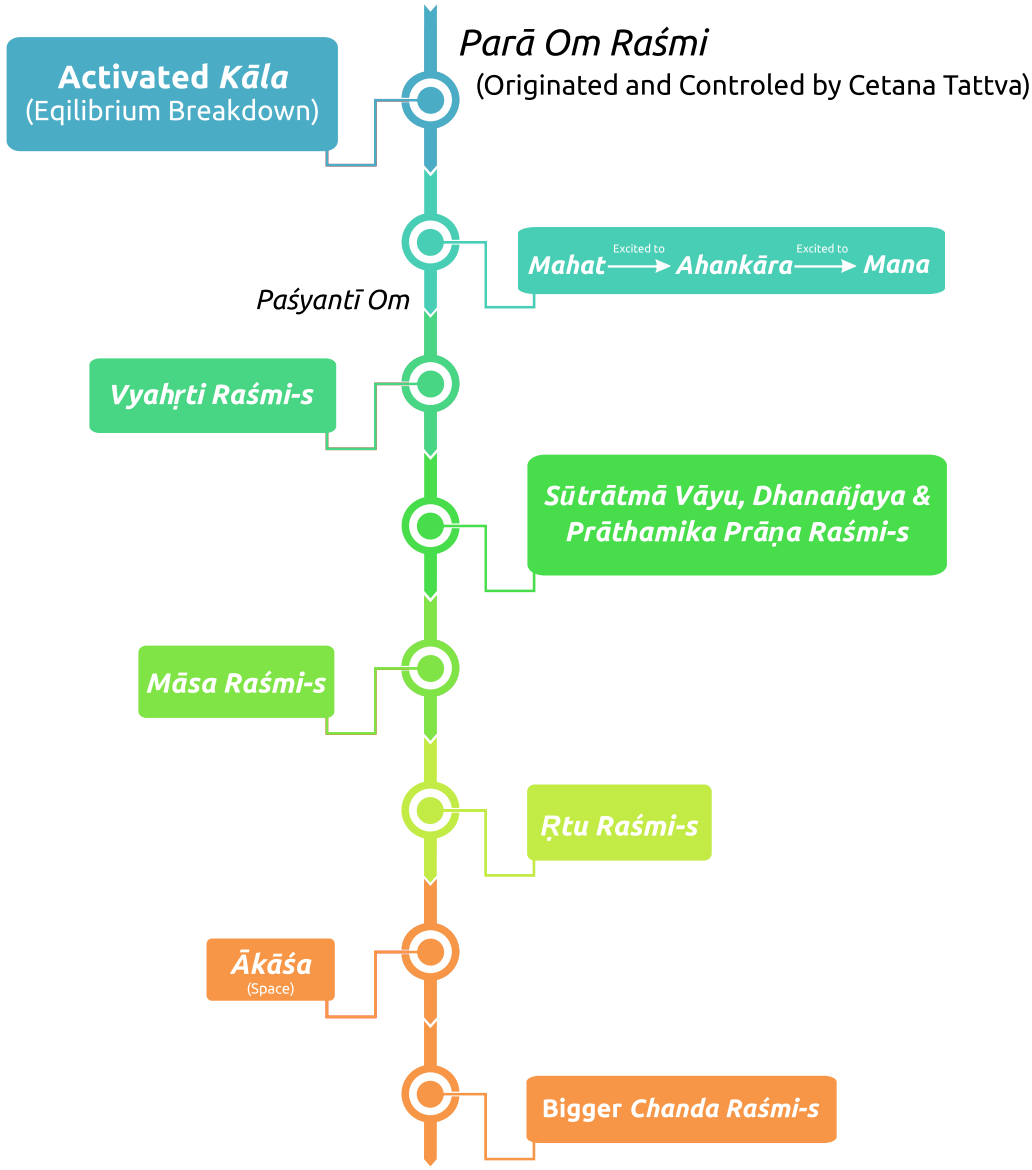
1. What are the causes of creation? Explain.
2. What is the cosmos, and why is it necessary to learn about it?
3. What is creation and destruction in this world?
4. Prove that the cosmos is a logical and intelligent design and not a self-made random creation.
5. What are your views about Heisenberg's uncertainty principle? Explain.
6. Describe the history of the 'Science of Creation' in steps?
7. Do you know any modern technique which does not have any side effects? If yes, then explain it.
8. Can any intelligent creation be made without the creator? If yes, then demonstrate with an example.
9. What should be the properties of the creator and administrator of the cosmos?
10. Fill in the blanks:

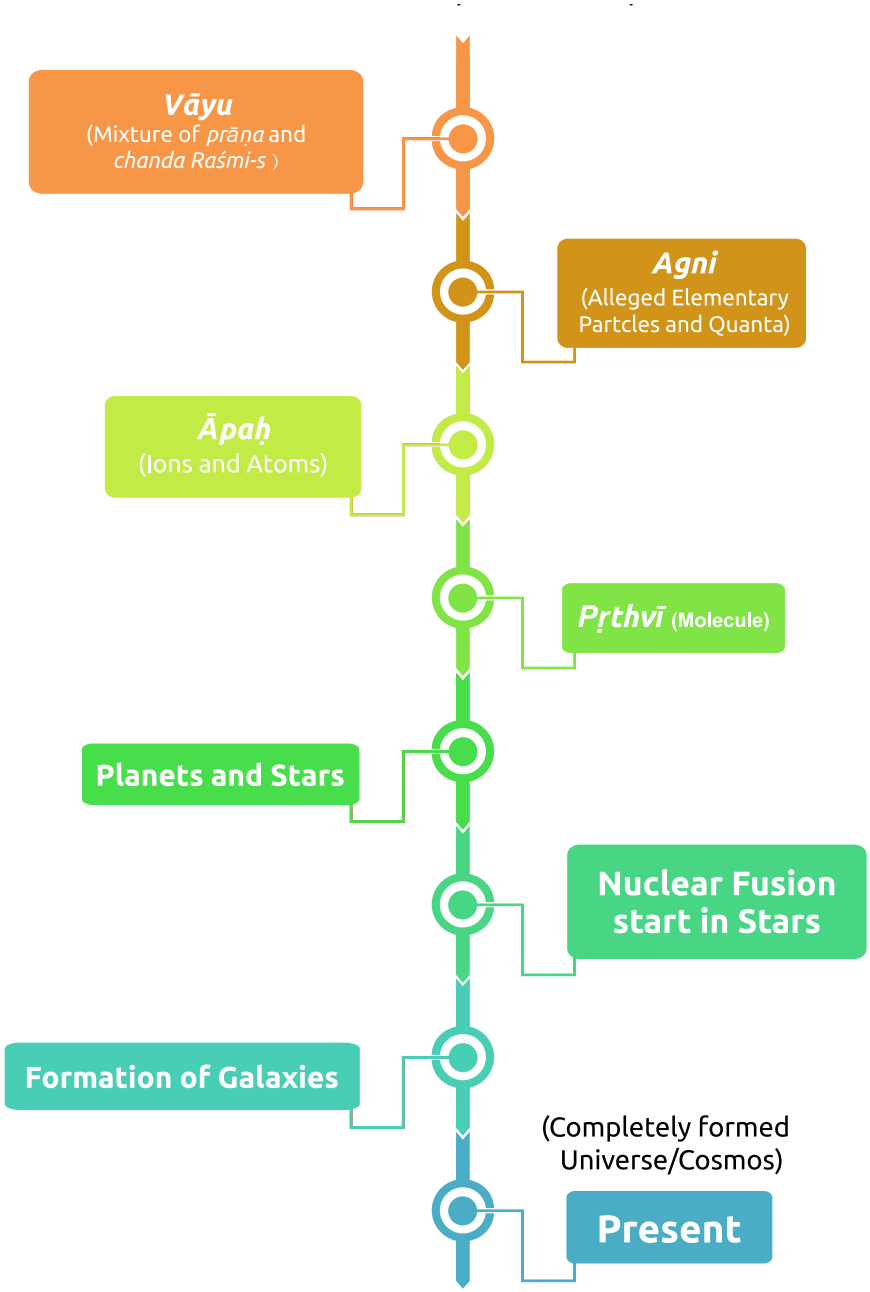
    ..... never exists and ..... never destroyed.

❋ ❋ ❋ ❋ ❋

Mahāpralaya

(Prakṛti - Equilibrium State of *Sat, Raj and Tam*)





Mahāpralaya

(Prakṛti - Equilibrium State of *Sat, Raj and Tam*)

CHAPTER 3

The initial state of the Universe

In the last chapter, we have briefly learnt about some basic questions like- what are the constituents of this cosmos, why is it necessary to know the cosmos etc., which may have come to your mind at some point of time. In this chapter, after the analysis of modern science, we will learn about the early state of the universe and the properties of the material that formed this cosmos.

3.1 Initial state of the universe according to modern science

Today, the 'Big Bang' theory is popularly considered to be the origin of the universe.[3] It tries to provide the answer to the question: when and how this universe was formed?

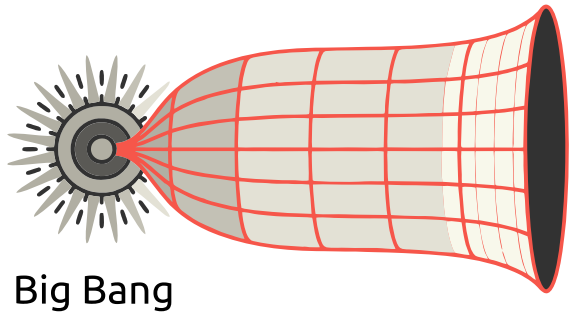


Figure 3.1 Big Bang and expansion of universe

According to the Big Bang Theory, approximately 13.8 billion years ago, the universe was condensed into a 'Point'. No one knows what happened then, and this universe began expanding, resulting in the formation of this universe. As this expansion also continues today, so the universe is also expanding. In the beginning, much energy was released, and it was so much that the universe was

[3] Here we will limit ourselves to the early state discussion of modern physics

still expanding. Edwin Hubble (1929) is credited to observe this. He said that the universe is ever-expanding, implying that it must have been dense and compact at some point in time. Georges Lemaître (1927) proposed this theory about the universe's origin, known as the 'Big Bang' theory.

According to this theory, immediately after the Big Bang at 10^{-43} seconds, the gravitational force came into existence and laws of physics came into the picture. In a fraction of a second, the universe expanded 10^{30} times (much greater than the velocity of light!), and super-hot plasma of Quarks, Leptons and Photons had been made. At 10^{-6} seconds, Quarks combined to form Protons and Neutrons, and the universe slightly cooled down. After that, Hydrogen, Helium etc., came into existence, and other physical substances started creating.

At the time of the Big Bang,

$$V = 0, M = \infty, \rho = \infty, T = \infty$$

(Here V, M, ρ and T are respectively Volume, Mass, Density and Temperature of the universe)

This means the volume was approximately zero, and the mass, density and temperature-energy were infinite. Most of the world's scientists consider the origin of this universe from a Point or Singularity. Stephen Hawking, also, in his book 'A Brief History of Time', has regarded as the point to be of zero radius. Later in July 2010, he mentioned the 'Point' to be smaller than a molecule on the Discovery channel.

Let's assume that the 'Big Bang' theory is correct. Then, was it possible that the universe had zero volume? Doesn't zero volume mean 'zero space'? That zero-volume cannot contain anything, let alone infinite mass. The mass, density and temperature in a zero-volume object will only be zero. Just think, is space not required for mass and energy?

In the year 2004, famous Indian astronomer *Prof. Abhas Kumar Mitra* concluded that no black hole could have zero volume in his research paper published in international journals. If it ever happens then, its mass will also become zero. Scientists consider the origin of the universe with an infinite mass. Then, how the volume can be zero?

In August 2004, in the International Vedic Science Congress, Bangalore,

notable *Vaidic* scientist ***Acharya Agnivrat Naishthik***, in his paper submission, proved that there is no possibility of infinite mass and energy in zero volume; even minuscule mass and energy is simply not possible. Some prominent scientists, including Steven Weinberg, also do not believe in this 'Big Bang' and disapprove of its beginning from zero. Moreover, they do not consider the process of origin of this creation from the elementary state too. Instead, they consider the matter to be spread everywhere and name the phenomenon of sudden movement in it as 'Big Bang', on the other hand, some scientists give the name 'Big Bang' to the process of spreading the space everywhere simultaneously in the dense matter spread over infinity and spreading the matter with it. Whatever be the case, there is no scientific theory that can explain the origin and early state of the universe with certainty.

During Big Bang, in which form does the energy exist? Why did the Big Bang happen? How did space and time originate with the Big Bang? The rapid expansion happened in which thing- In zero? Just like any activity takes time, when there was no time and space, how did the expansion occur? These are some logical and open questions that scientists are unable to answer.

Steady-state theory, bubble universe, big bounce, mirror universe etc., are the several popular theories being propagated to explain the origin of the universe, but no theory can explain the origin and early state of the universe. Scientists accept that no one knows what was before the Big Bang. So, the Big Bang does not explain the origin and early state of the universe. Likewise, no branch of modern physics can explain the origin and the early state of the universe.

3.2 The necessity to learn about the early state of the universe

Figure 3.2 Construction of Building

At first, let us realize that to know an object, we need to understand the material composition of that object. For example, to understand the construction process of a building, we should know about the substances that have been used to construct it, like we need bricks, water, cement, gravel etc., for construction. Next, we should know what exists new fromation before at that place. Only then we can understand the construction process better.

Likewise, suppose we want to understand the cosmos. In that case, we must understand the primary material it is made up of and in what form it existed before the creation of the universe? Modern science has diverse opinions about the early state of the universe and therefore has many opposing views regarding the origin of the universe, and all of them have their own logic and theories. We have given just one example here. You can understand the importance of material cause or the primary material to know the creation process of various things being used in your life.

Now we will try to understand the fundamental material from which this cosmos is created and arranged. What is it? What are its properties and features, and how did it exist before its creation? *Vaidic* Science terms fundamental material as **'*Prakṛti*'**. Let us know about it.

3.3 *Prakṛti*

According to *Vaidic* Science or *Veda* and our *Ṛṣi*s, this cosmos is created from '*Jada Padārtha'* or inert/non-living material and the state of this is called '*Prakṛti*.' *Prakṛti* is the most subtle, initial and natural state of any fundamental material. Infinite objects in this cosmos, from the heaviest stars to the tiniest particles, waves, space, etc., all are created from this *Prakṛti*. They stay in it and will ultimately assimilate in the same.

The subtlest form of the material from which the stars, the space, waves and elementary particles etc. are created is known as 'Prakṛti'.

Whatever we can see and cannot see in our surroundings are made of atoms and molecules at the micro-level. If we further divide them, we find atoms to be composed of electrons, protons and neutrons. Again, protons and neutrons are assumed to be made up of tiny particles called quarks. *Now the question is, what are these quarks and electrons made up of?* Modern science has no answer

to these questions as there is no technique that can detect such a subtle entity. Present scientists consider these (unknown) minute particles as made up of tiny 'Strings', but they cannot explain much about these 'Strings'. In reality, their explanation about this 'so-called' theory is limited to mathematical calculations only.

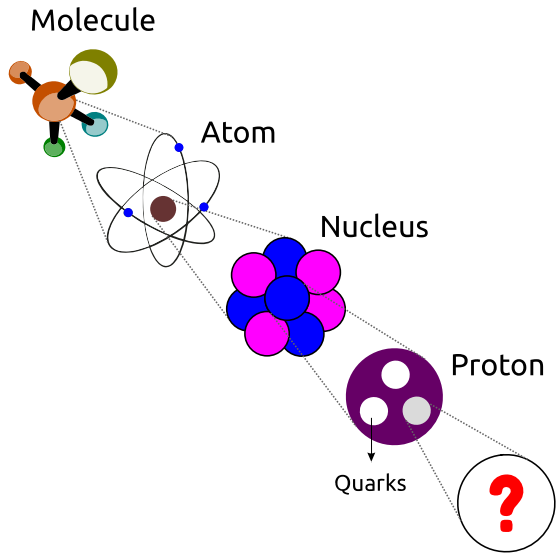


Figure 3.3 Division of molecules in various stages

According to *Vaidic* Science, the form of material that cannot be further subdivided, is not formed from any subsequent subtle entities, is the cause for all elementary particles, even all waves, space etc., is called as *'Prakṛti'*.

3.4 Features of *Prakṛti*

Let us now understand what the features of *Prakṛti* are? According to the great *Vaidic* Scientist *Maharṣi Brahmā, Mahādeva Śiva* etc., following are the properties of *Prakṛti*-

1. This material always exists and is never absent. Even after the creation of the cosmos, this matter still surrounds us.
2. This material is never created, neither increases nor does get diminished, never gets old and never gets destroyed. It remains conserved during the formation and the destruction of this cosmos. Whether we can observe it or not, all materials in this cosmos except

Prakṛti have a limited life span. They are created and are destructed, but *Prakṛti* is infinite and eternal.

3. Before the origin of the cosmos, this material was uniformly and homogeneously dispersed in the *'Avakāśa'* (pure emptiness). There was no movement (any type of upward or downward motion or is denser or lighter in different places). It was calm and stable like an ocean and has occupied whole places in this cosmos. However, water in the ocean has motion, and there is a gap between the molecules, but, *Prakṛti* is uniform everywhere.
4. It is the subtlest possible form of the material. In the cosmos, nothing can be subtler than this, except conscious entities. It is neither in the form of a wave nor a particle or space.
5. During the phase of *'Mahāpralaya'* (universal dissolution- when the destruction has been completed, i.e., time of calmness), it lies in a completely inactive state with no activity or motion.
6. A conscious entity does not create it. However, the supreme conscious entity can activate or deform it but can never originate it.
7. It is that state of the material that cannot be known or detected by any technique.
8. In this cosmos, whatever non-living objects exist, are existing and will exist in future and are formed from this non-living fundamental material (*Prakṛti*).
9. The entire cosmos is created within and from this material only. No activity can occur outside it.
10. It remains in the state of 'darkness', and this form of 'darkness' does not exist in any other state of matter.
11. Anything that is destructible is destructed, disintegrated and absorbed into its material cause (*Prakṛti)*.
12. Any type of vibration neither happens nor is possible in this state.
13. There is no motion in this state.
14. This material is sufficient to form the cosmos, i.e. no other non-living material is needed.
15. This material is in the equilibrium state of the three properties or '*Guṇa*s': *Satva, Rajasa, Tamas,* i.e. they exist but are so inactive and inert that they appear non-existent.
16. This *Prakṛti* holds everything from elementary particles to the biggest star and space etc.

From the *Vaidic* Science perspective, the features of the *Prakṛti* mentioned in the above points highlight the state of the fundamental material at the time of *'Mahāpralaya'* and before the creation of the cosmos. The entire material is spread uniformly everywhere and has infinite volume. This way, the primary causal material remains dispersed or spread homogeneously everywhere in an infinite volume as can never be present anywhere else in this creation period. Complete darkness surrounds the entire material. That material has zero mass, zero density, and is completely energyless, which means, at that time, energy, light, temperature, mass, motion, force, space, sound, or any subtle vibrations - nothing exists.

The entire cosmos is supposedly assimilated in that latent or unexpressed deep dark *'Prakṛti'*. The material does exist, but there is no indication that it exists. It neither exists in the form of a wave nor in a particle. At that time, the *'Ākāśa'* or what we call 'space' also does not exist. The material existing then is even smaller than these, and a more subtle state can never be possible. This form of material is called as *'Prakṛti'* and as it has three *'Guṇa'* (properties) so the *'Prakṛti'* is also called as *'Triguṇā'*. In *Mahābhārata*, 30 adjectives have been used to describe it.

Activity

Try to learn about the initial stages of the creation of the cosmos from the Physicists around you and compare it with the *Vaidic* concept of creation of cosmos.

3.5 The *'Guṇa'* (properties) of *Prakṛti*

Prakṛti has three properties: *Satva, Rajasa and Tamas* (*SRT)*. Their mutual equilibrium is called *Prakṛti*. Also, it implies that when these are in an idle or non-active state, they remain in equilibrium. Let us now learn about them-

1. *Satva* – *Satva* is a property that creates light and attractive forces over time and makes the creatures feel happy and at peace.

2. *Rajasa* - This gives rise to repulsive–projectile force and initiates motion; implies that the cause of these is *Rajoguṇa*. Versatility, love-hate etc., in creatures, are due to *Rajoguṇa*.
3. *Tamas* - Darkness, idleness, inactivity, mass, gravity, etc., are due to *Tamoguṇa*. It gives rise to stupidity, fascination, excessive sensuality, laziness and anger in the creatures.

In *Mahābhārata*, as per *Maharṣi Brahmā*, these exist in pairs, are mutually dependent and supportive, follow each other and stay combined. So, *Tamoguṇa* pairs with *Satva*, *Satva* pairs with *Rajasa*, *Rajasa* pairs with *Satva* and *Satva* goes with *Tamas*.

In the language of modern physics, it can be understood as where there is mass, there is force, even if it is a force of gravity. Where there is force, there will undoubtedly be an activity. Where there is activity, there will be a force behind it; like no force exist without field, and field cannot exist without activity. Likewise, where there is force, there will be mass too. In this entire discussion, only *'Kāla'* (time) is the exception because that force is of the conscious entity. Hence, this rule does not apply there. Controlling (restricting) *Tamoguṇa* will increase in *Rajoguṇa* and controlling the *Rajoguṇa* will increase in *Satvaguṇa*.

Figure 3.4 Meteoroids entering the earth's atmosphere

Let us try to understand it differently. Suppose we restrict an object's inertness, its self-activity increases, viz., in nuclear fusion. In that case, the mass (*Jadatva*) transforms into energy (motion). On the other hand, suppose the activity of the particle is restricted. In that case, it releases energy and light, just

like a meteor shines while entering the atmosphere and restricting the movement of an electron releases heat and light (Bremsstrahlung).

As per *Maharṣi Brahmā*, as long as *Satvaguṇa* present, then surely the *Rajoguṇa* also exists. Also, as long as *Tamoguṇa* exists, till then, there must be the presence of both *Satvaguṇa* and *Rajoguṇa*.

It is clear here that *Satva* and *Rajasa* can stay without *Tamas*, but for the existence of *Tamoguṇa*, both *Satvaguṇa* and *Rajoguṇa* must be present. Thus, in *Kāla Tattva* (time), the two properties *Satva* and *Rajasa* are present, and the *Tamoguṇa* is in a completely inactive state.

Let us understand it -

In this cosmos, the object with illumination and force etc., has properties like mobility or activity and a tiny amount of inertia, mass etc. Even the ever-moving light must have mass. Hence, the light has all three attributes (*SRT Guṇa*s). On the other hand, if we consider elementary particles, they have mass and motion but minimal illumination. Hence they also have all three attributes (*SRT Guṇa*s).

In this chapter, we have learnt about the fundamental causal material of the cosmos, i.e. *Prakṛti* and its attributes which remain inert and inactive in that state.

You learnt in this Chapter

- ✓ Cosmos originate from a material termed as *Prakṛti*.
- ✓ In this *Prakṛti*, there is no illumination or other properties like mobility. Due to this, that fundamental material can neither be called matter, nor energy, not even space.
- ✓ Therefore, *Prakṛti* has the following characteristics
  1. The volume is infinite
  2. The mass is zero
  3. Temperature is negatively infinite
  4. Density is zero

5. No application of force or activity takes place. This makes that material calm, completely dark and is uniformly filled in infinite volume.
6. It is neither particle nor wave, and it is not even space.

- ✓ *Prakṛti* is the subtlest, elementary and natural state of any inert/non-living material.
- ✓ The material that is not made of any subtle things and cannot be further subdivided is called *Prakṛti*.
- ✓ There is never a deficiency of *Prakṛti*. It always remains conserved in both creation and destruction phases.
- ✓ *Prakṛti* has three *Guṇa* or attributes (*Sattva*, *Rajasa* and *Tamas*), which remain in equilibrium and inactive state before creating the cosmos.
- ✓ *Sattva* is a *Guṇa* (attribute) that subsequently creates light and attractive forces.
- ✓ The *Rajoguṇa* gives rise to repulsive-projectile forces and initiates motion.
- ✓ *Tamoguṇa* gives rise to darkness, idleness, inactivity, mass, heaviness etc.

EXERCISES

1. To know about the formation process of any substance, is it necessary to know the state existing before the origin of that substance? Explain with reasons.
2. What was the initial state of the cosmos?
3. In the initial state of the cosmos, how did the sudden activity and the disturbance occur?
4. Explain the creation process of the universe from the modern science perspective.
5. What was the initial state of the cosmos according to *Vaidic* physics? Explain.
6. What is the density, mass, temperature and volume of the *Prakṛti*?
7. What kind of material is *Prakṛti* and what are its *Guṇa*s (attributes)?
8. What does the equilibrium of the *Guṇa*s means?
9. What are the anomalies in the ‘Big Bang’ theory?
10. Why is it necessary to know the initial state of the cosmos? Explain with example.

11. What forms when a particular *Guṇa* is in excess?

12. In the cosmos, which of the following material does not contain *Tamoguṇa*?

(a) *Kāla*
(b) *Diśā*
(c) *Mahat*
(d) Light

13. Which of the following statement is not true?

(a) *Tamas* pairs with *Sattva*
(b) *Sattva* pairs with *Rajasa*
(c) *Rajasa* pairs with *Sattva*
(d) *Rajasa* pairs with *Tamas*

14. Which properties increase when the motion of an object is restricted?

(a) *Sattva*
(b) *Rajasa*
(c) *Tamas*
(d) *Rajasa* and *Tamas*

15. Which of the following exists in the state of *Prakṛti*?

(a) Light
(b) Motion
(c) Heat
(d) Darkness

16. In the equilibrium state of *Prakṛti*, which of the following property does not exist?

(a) Eternal
(b) Infinite
(c) Sound
(d) Uniform

❋ ❋ ❋ ❋ ❋

CHAPTER 4

What is *Kāla* (Time)?

In the last chapter, we have learnt about the *Prakṛti* and their attributes. The inert and inactive state of the *Prakṛti* is known as '*Mahāpralaya*' (universal dissolution). According to *Ārṣa* (*Vaidic*) texts, the duration of the *Sṛiṣtī* (active *Prakṛti*) and the *Mahāpralaya* (inactive *Prakṛti*) is equal. When the equilibrium is disturbed, the formation of this cosmos begins. In this chapter, we will learn how the entire cosmos is created from the inert *Prakṛti*. **What is the first thing created from the *Prakṛti*?** As per *Vaidic* Science, the first thing created is **'*Kāla*',** which we experience in the form of 'Time'. Let us first understand the 'Time' in the present context. Later we will delve from the *Vaidic* perspective.

4.1 The notion of 'Time' as per modern science

Time is among those subjects which are still a mystery to the modern scientists. Some identify it as the 4th dimension of spacetime; others consider it a delusion of mind. At the same time, some others consider it to be the progress of past events into the future. They say that if there is no change in a coordinate system, it is timeless. In modern science, time is considered as the interval between the two events. However, what is time? No one knows. Scientists believe that the time started with Big Bang, but exact functioning is still unknown to modern physics.

Today, time is considered as a 'dimension'. According to Albert Einstein, different reference frame has different values of the time. Modern science accepts that time can appear to move slower and faster relative to the different parts of spacetime.

$$\Delta\tau' = \frac{\Delta\tau}{\sqrt{1-\frac{v^2}{c^2}}}$$

Here $\Delta\tau$ is the proper time in the frame of reference moving with clock, $\Delta\tau'$ is the relative time, viewing the same clock in another reference frame, c is the speed of light in vacuum, and v is the velocity of the object.

Till the watch was not invented, the time was calculated based on the day-night, movement and positions of the sun and its shadow on the earth (fig. 4.1).

[**Figure 4.1** '*Samraāta Yantra*' in *Jantara Mantra* Jaipur (a Big Sun Dial) through which the time can be calculated with sufficient precision. Its height is 90 ft from the base.]

Presently, the time is measured in hours, minutes and seconds using a clock. Its SI unit is second, which is the duration of 9,19,26, 31,770 wave cycles of the radiation corresponding to the transition between the two hyperfine levels of the ground state of the Cesium-133 atom. The smallest unit of time is considered as Planck's time which is 5.391×10^{-44} seconds.

Let's talk about *Āryāvarta* (*Bhārata*). We find a detailed description of time measurement units in the 3500 years old '*Jyotiśa Śāstra*'. According to it-

1	*Truṭi*	=	1	33750th of Second (1/33750 Second)			
100	*Truṭi*	=	1	*Tatpara*			
30	*Tatpara*	=	1	*Nimeṣa*			
18	*Nimeṣa*	=	1	*Kaṣṭhā*			
30	*Kaṣṭhā*	=	1	*Kalā*			
30	*Kalā*	=	1	*Ghaṭī (Nāḍī, Daṇḍa)*			
2	*Ghaṭī*	=	1	*Muhūrta (Kṣaṇa)*			
15	*Muhūrta*	=	1	*Ahara (Dina)*			
30	*Muhūrta*	=	1	*Ahorātra (Dina-Rāta)*			
10	*Guru (Dīrgha)*	=	1	*Asu (Prāṇa)*			
6	*Asu*	=	1	*Pala*			
60	*Pala*	=	1	*Ghaṭī*			
60	*Ghaṭī*	=	1	*Ahorātra*			
60	*Ahorātra*	=	1	*Māsa*			
12	*Māsa*	=	1	*Varṣa*			
1	Second	=	2.5	*Gurvakṣara (Dīrghākṣara) Kāla*	=	1/4	*Asu*
4	Second	=	10	*Gurvakṣara (Dīrghākṣara) Kāla*	=	1	*Asu*
24	Second	=	1	*Pala*	=	6	*Asu*
1	Minute	=	2.5	*Pala*	=	15	*Asu*
24	Minute	=	1	*Ghaṭī (60 Pala)*	=	360	*Asu*
1	Hour	=	2.5	*Ghaṭī*	=	900	*Asu*
24	Hour	=	1	*Ahorātra*	=	21600	*Asu*
1	Second	=	11.25	*Nimeṣa*			
1	Second	=	337.50	*Tatpara*			
1	Second	=	33750	*Truṭiyāṁ*			

1	*Nimeṣa*	=	30	*Tatpara*
1	*Ahorātra*	=	972000	*Nimeṣa*

[*Samullāsa-12, Vedokta Jyotiśa evaṁ Vedārtha, Svāmī Brahmānanda Sarasvatī*]

4.2 'Time' as per modern science

What is 'time'? is a complex question. Several books have been written about 'time', but none explains what time is? Is it flowing at a constant speed? Or is it that which is continuously degrading the substances and moving ahead? In reality, whatever we understand about the 'time' is the duration gap or interval between two events. Whenever we think about time, our attention goes towards the clock.

A clock is an instrument measuring some strange thing that has not been seen or observed by anyone. So whatever we are measuring by the clock is the duration gap.

Let us understand 'time' differently-

Imagine that we are weighing something with a weighing scale- let's say apples (fig. 4.2). At this point, we know what we are measuring. In our case- It is apples. Likewise, what are we measuring in a clock? When we say it is one hour, what is this hour or minute? We are unaware of it. Modern scientists observe time and space combining, but they neither explain space nor time. Are these two words only to be used in routine behaviour, or are these some real material, which play a role in creating this cosmos? Let us learn about it.

Figure 4.2

4.3 *Vaidic* concept of *Kāla*

Maharṣi Kaṇāda, the author of notable text *Vaiśeṣika Darśana* on material science, not only considers the substance (*Dravya*) as the material but its properties and functions etc. too as a separate material. Of the nine substances, *Maharṣi* has considered *Kāla* (time) and *Ākāśa* (space) too as substance.

Explaining the properties of the substance, he says that, "those substances

which can contain properties and functions, i.e. in which the properties and functions reside or can reside and are *'samavāya kāraṇa'* (material cause, for example, Gold, Silver, etc.) of a *kāryarūpa* (effect, for example, Ornaments) material are called the matter". Here *'samavāya kāraṇa'* means they are always combined together with a substance they originate with. Here, we will only discuss the substance named '*Kāla*' or Time.

Maharṣi Kaṇāda, while highlighting the differences between other substances and time, space and direction, has written that these three are inactive substances (*Dravya*). Mentioning the properties of time, he writes that apart from getting younger and older (shortness and longness of duration), getting faster and slower are also the behavioural properties of time.

Here a question can be asked whether the *Kāla* is an imaginary material that remains inactive and is used in behavioural interactions only. Earlier, *Maharṣi* had said that substance has actions and attributes, but again, he says that, of all the substances, *Kāla*, space and direction are inactive. What is the mystery behind it? In the view of *Maharṣi Kaṇāda*, time is a material that is functional as well as inactive also. On the other hand, as per *Maharṣi Yāska*, *Kāla* is a material that has properties like induction, retention (holding), mobility and acquisition.

In reality, *Kāla* is a material that we will discuss subsequently, while the 'time' (as we understand generally) is a dimension/coordinates used in daily interactions. Let us understand it with our previous example of measuring apples. Imagine that the apples that we weigh are 5 Kg, here the 'weight' is the attribute of a substance which is 'apples', and that is five; and the substance whose attribute is measured is 'apples'. Likewise, when we measure the 'duration gap' between two events, then the 'duration gap' bears the same relation to '*Kāla*' as that 'weight' is to 'apples'.

4.4 Origin of *Kāla*

When this cosmos is created, then the initial activities that happen are as below-

At first, the omnipresent supreme conscious entity desires to create the cosmos. It is the first step of creation. It should be remembered that non-living material has no tendency to act by self. Just like, our body is non-living, and only because of the conscious entity, we have the desire to act. Similarly, the cosmos

cannot begin creating on its own; neither it can do so. After his desire, the first thing that is created is *Kāla*.

Let us now revert to our discussion of the creation of the cosmos. At first, the almighty conscious entity induces the vibrations of *'Om' Raśmi* everywhere in subtlest and *Parā* form, in the *Prakṛti* which is in the equilibrium state of *Sattva*, *Rajasa* and *Tamas*; this *'Om' Raśmi* stimulates and activates the three attributes.

Also, among these, *Satva* and *Rajasa* are activated first in order to create *Kāla*. As these two are activated, the *Kāla* is functional. This ever-active *Kāla* stimulates the *Triguṇā Prakṛti*. Also, this *Kāla Tattva* is latently transmitted in the form of *'Om' Raśmi*, in *Prakṛti* having two attributes. This way, the subtlest form of *'Om' Raśmi*, i.e. *Parā* form, combines with the *Prakṛti* and takes the form of *Kāla*.

In this form, the attributes of *Prakṛti* are not in equilibrium as in the fundamental form. Hence it cannot be considered imperceptible. Due to this, a subtle force is generated. *'Om' Raśmi* is capable of initiating attraction in the fundamental material. But till now, too, the equilibrium state is not completely breakdown. This form of the *Prakṛti* is '*Kāla*'. *'Om' Raśmi* is directly linked to the supreme conscious entity. It originates in the *Prakṛti;* Hence, it is a non-living or inactive (*Jada*) material; while it is directly connected to *Cetanā Tattva* (supreme conscious entity), it behaves like a conscious entity too.

That almost imperceptible state of *Prakṛti*, in which imperceptible transmission of most subtle *'Om' Raśmi* has taken place, due to which the '*Sattva*' and '*Raja*' attributes are expressed in very subtle form, but *Tamoguṇa* stays imperceptible; the name of this state of *Prakṛti* with the origin of a very subtle force of attraction and motion is *Kāla*, which generates the initial force in the entire *Prakṛti* and the entities created from it.

4.5 Features of the *Kāla*

1. *Kāla Tattva* has two attributes (*Guṇa*) of *Prakṛti*: *Sattva* and *Rajasa*. In this, the *Tamoguṇa* is completely inactive; hence it is absent. Due to this reason, *Kāla* is always in motion and is never at rest.
2. Apart from *Kāla*, all other materials will compulsorily have the three attributes (*Guṇa*s) in some proportion.

3. *Kāla* is an omnipresent, ever-moving homogeneous material, which stimulates every material, but itself gets stimulated by none other than the almighty conscious entity.
4. *Mana*, *Prāṇa* and *Chanda Raśmi*s originate from the stimulation of *Kāla,* and these further create other entities.
5. *Kāla Tattva* is the root of many materials and activities. It is only the instrumental cause (*Sadhāraṇa Nimitta Kāraṇa*) but not the material cause (*Upādāna Kāraṇa*) of them. It means that *Kāla Tattva* is not itself a component of these materials.
6. *Kāla Tattva*, stimulates the '*Manas-Tattva*' and produces seven '*Vyahṛti Raśmi*s' (*Bhūḥ, Bhuvaḥ, Svaḥ, Mahah, Janaḥ, Tapaḥ, Satyam*). Using these seven *Raśmi*s, *Kāla Tattva* creates subsequent *Raśmi*s.
7. *Kāla Tattva* neither degrade the unborn and imperishable entities nor can. Whereas it pervades the impermanent materials and keeps them dilapidated continuously.

It is the '*Kāla Tattva*', which is the state of *Prakṛti* as mentioned above, which converts the '*Triguṇā Prakṛti*' into '*Mahat-Tattva*' and later stimulates it. In this process, the *Kāla Tattva* activates the '*Tamoguṇa*' and creates the '*Mahat-Tattva*' and other materials. This way, it creates, stimulates and activates various materials and also holds them. Modern science also accepts that matter has been stimulated and created by energy; with this, the matter is held by energy and also is its form.

'*Prakṛti*' having *Parā 'Om' Raśmi,* which is also called *Kāla Tattva,* never decays. In the state of 'absolute dissolution' or '*Mahāpralaya*', it continues to exist in imperceptible form without stimulating the '*Prakṛti*'. Hence, it can be said that the activation of *Kāla* or *'Om' Raśmi* is the first step in the creation of this cosmos. However, in reality, the *Kāla* always exists in imperceptible form.

The subtlest form of *'Om'* and other *Akṣara Raśmi*s do not get destructed completely; hence, these are called as *Akṣara Raśmi*. It is true that during '*Mahāpralaya*', the imperceptible *'Om' Raśmi* does not actively interact with the *Prakṛti*. However, the *Kāla Tattva* exists in the most imperceptible state. It continues to stay in this form for the entire duration of *Mahāpralaya* and is infinitely and eternally present as a seedform in the other states of *Prakṛti*. Due to this ageless (*Ajara*) *Kāla Cakra* (cycle), the cycle of creation and destruction continues infinitely. We will read more about *Akṣara Raśmi* in the next chapter.

In a nutshell, in this cosmos, from subtlest to the grossest materials, all are originated from *Kāla* and induced by it too.

4.6 The working mechanism of *Kāla*

The question now is how does the *Kāla* work? Let us know about it-

When *Parā 'Om' Raśmi* (the *Kāla*) first starts distorting the *Prakṛti* (which was in an equilibrium state earlier) with the most subtle induction of cosmos. The various latent *Akṣara Raśmi*s become active and gradually transform the fundamental material into *Mahat*, *Ahankāra* and *Manas-Tattva*. But the *Kāla* itself remains undistorted, which in turn, along with the *Tamoguṇa,* stimulates and distorts the *Prakṛti* having two other attributes (*Sattva* and *Raja*), to create the cosmos. That *Kāla Tattva* generates the *Paśyantī* form of *'Om'* and induces vibrations and activity to produce seven subtle *Vyāhṛti Raśmi*s. Subsequently, using these *Raśmi*s, it creates the seven main *Prāṇa Raśmi*s (*Prāṇa*, Apan etc.) and later the other *Prāṇa*, *Marut*, and *Chanda Raśmi*s and continues the creation of cosmos. Even at present, the *Kāla Tattva* being present inside every elementary particle, wave, space etc.; activates all by inducing *Paśyantī* form of *'Om'*, from subtle *Vyāhṛti Raśmi*s to all the *Raśmi*s present in them and also brings suitably dilapidate in them.

Question: What are these 'stimulation' and 'activation' processes?

Answer: We see different forms of stimulation and activation in the world. When a person controls an animal with a stick, he stimulates the animal by sticking to do a particular task. A father scolds his rogue son to stimulate him and pushes him for work, and post the stimulation; the son is compelled to work, while for an intelligent and obedient son, the father stimulates him only through the indication of his eyes. On the other side, a person doing some work intensely, being hurt by some sad news, sits thinking of himself as weak; he also becomes really weak.

In a nutshell, the supreme conscious entity stimulates and creates the *Kāla Tattva* from the imperceptible and unknowable sense. Next, the *Kāla* subtly stimulates and initiates the vibrations in the *Prakṛti*. These vibrations distort the equilibrium of *Prakṛti* and convert it into *Mahat*, *Ahankāra* and *Manas-Tattva*. Subsequently, this process of stimulations and vibrations goes on.

In the creation of any material, there exists a stimulation of its predecessor material. In this way, all the subtle to the gross materials work by binding in a chain with stimulation from the supreme conscious entity and *Kāla*. However, the stimulation by a supreme conscious entity, *Kāla*, *Manas-Tattva* etc., is very-very subtle which cannot be explicitly described.

Activity

What is 'time'? What does the modern science say about it? Gather as much information as you can about it and compare it with the '*Kāla*' as explained in the *Vaidic* Physics.

4.7 Is it possible to Time Travel?

Some people talk about travelling in time, i.e. going back and forth in time. However, is it possible? Let us explore-

What does it mean to go back in time or past? Is it possible for an old scientist to see his childhood or youth, and can he gain that look? Can he meet those people who are dead at present? Is it possible to travel back in the age of *Rāmāyaṇa* and *Mahābhārata* and observe and create the people and situations existing that time on the earth? This is not possible! Yes, we do accept that in the future, scientists can invent techniques through which we can listen to the sounds of the *Mahābhārata* war (as per the *Vaidic* Science, the sound is eternal), but in reality, they cannot create those situations. It is also possible that an older person may look younger by using some chemical, but this does not mean that the past has returned. Science can use special techniques of force and energy to increase or decrease the speed of reactions within the substances, but it cannot be construed that it is due to controlling the speed of time.

When we talk about travelling into the future, what does this mean? Can someone directly observe all the happenings of the future? This is just an imagination. At least the past is fixed, but the future is entirely uncertain, then how can it be seen? A *Yogi* (*Vaidic* Scientist, passed all steps of *Aṣtāmgayoga*)

of higher-order can guess the future events, but this does not imply that he has travelled in the future. Is it possible for someone to travel in time and see himself burning in the funeral pyre? Can one witness future geographic events in a moment?

In reality, modern scientists do not understand '*Kāla*' but only consider mathematical calculations as the only basis to draw such inferences. They misapply the 'theory of relativity'. They cannot understand the difference between the 'duration of time' and the '*Kāla*'. If a person considers the length, width and height or measuring units' meters, feet etc., as the space, is it not his delusion? It will be the same as considering the hour, minute and second, which are the duration measuring units, as *Kāla*. We believe that modern science, which is unaware of *Vaidic* Science, has been making such mistakes and will continue to do it in the future.

You learnt in this Chapter

- ✓ *Kāla* is an inactive material that initially originates by *Parā 'Om' Raśmi* from Tri*guṇā Prakṛti*.
- ✓ *Kāla Tattva* has two attributes of the *Prakṛti,* i.e. the *Sattva* and the *Rajasa*. The *Tamas* is in a completely inactive state.
- ✓ Since *Kāla* has no *Tamas* attribute, it is always in motion.
- ✓ *Kāla Tattva* converts the *Triguṇā Prakṛti* into *Mahat-Tattva* and initiates the creation of other materials.
- ✓ *Kāla Tattva* does not affect the eternal and immortal entities while continuously affecting the mortal or ephemeral materials.
- ✓ Going back in time or travelling in the past is an imagination. It is not possible.

EXERCISES

1. What is the initial step of the creation of the cosmos?
2. Is *Kāla* an imaginary material? If yes, how? If no then what is *Kāla*?
3. Why is it not possible to travel back and forth in time?
4. What are the features of the *Kāla*? What is its role in the creation of the cosmos? Explain its working mechanism.
5. What is the difference between the 'Time' of modern science and the '*Kāla*'?
6. What do you understand by the stimulation's process?
7. Which entities are not decayed by the *Kāla*?
8. Is *Kāla* eternal or ephemeral? When considering *Kāla* as eternal, should we consider four entities: supreme conscious entity, *Jīva*, *Prakṛti* and *Kāla*, as eternal?
9. Analyze the concept of the 'time' as per modern physics.
10. Describe in detail the process of the origin of *Kāla* as per *Vaidic* Physics.
11. What are your views regarding Time Travel? Explain with reasoning.
12. How many '*Nimeśa*' are there in 1 hour?

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CHAPTER 5

Preliminary stages of the origin of Cosmos

According to *Vaidic* Physics after *Kāla Tattva*, the next thing created is termed as *Mahat-Tattva*. In the cosmos, this is the first material that is the root cause of the force and actions, and its distortion creates various materials in this cosmos. The excited state of *Mahat* is *Ahankāra*, and the excited state of *Ahankāra* is *Mana*, just like a raw mango first converts into a half-ripe mango later ripens fully (fig. 5.1).

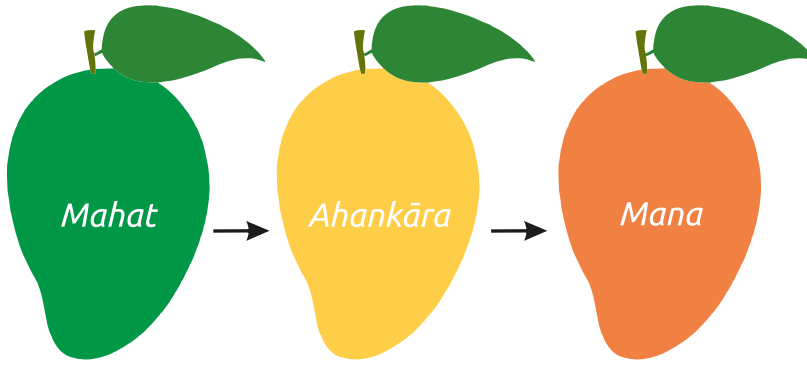

Figure 5.1

5.1 *Mahat-Tattva*

Mahat-Tattva too carries the properties of imperceptible *Prakṛti* and therefore is imperceptible but not completely. In *Sānkhya Darśana*, *Maharṣi Kapila* has considered the three *Mahat*, *Ahankāra* and *Mana* as a distinct entity. The features of *Mahat-Tattva* are as below-

1. This material, very subtle but extensive, contains comprehensive force and a mild indistinct glow.
2. This material is the first to start the creation of various materials, having

the properties of combination and separation etc.

3. According to *Maharṣi Dayānanda Sarasvatī*, it is the '*Kāraṇa Vidyut*' (the subtlest form of Electricity) too, which is present in the slightly distorted form of *Prakṛti*.
4. This material tends to control all other materials. It means subtle force originates in it for the first time.
5. It is where the inert material begins to appear as if in the manifested state, which means the imperceptible state of the *Prakṛti* is disturbed.
6. It can hold all other materials.
7. It is due to this only; all materials are conserved and remain in motion.

In this material, the attractive and penetrative forces begin to generate everywhere, resulting in an activity.

5.2 *Ahankāra*

In the view of *Maharṣi Kapila*, the excited and the advanced form of *Mahat-Tattva* is *Ahankāra*. Due to the dominance of the *Sattva*, *Rajasa* and *Tamas* attributes, the *Ahankāra Tattva* is termed as *Vaikārika*, *Taijas* and *Bhūta*, respectively. When *Mahat-Tattva* is in its second stage in the cosmos creation, i.e., in the manifest state, it is termed as *Ahankāra*.

Various '*Dev*a' materials, like *Prāṇa*, *Indriya*s and *Mana*; three subtle *Vyāhṛti Chanda Raśmi*s and other *Chanda Raśmi*s originate from it. Thus, this entire cosmos is, in a way, a form of *Ahankāra*, and due to it, it possesses attractive forces.

If we carefully analyse the nature of the *Ahankāra* and *Mahat-Tattva*, it becomes clear that electrical charge, mass and manifested and expected motions etc., do not appear in it. In this situation, it is neither matter nor energy and not even space in the modern science' language. In *Vaidic* terminology, it can be termed as both matter and energy, but in the language of modern science, it is still beyond imagination.

Let us delve into it in detail. As soon as the *Kāla Tattva* becomes active, subtle changes are initiated in the *Triguṇā Prakṛti*, and the *Parā* state of *'Om' Raśmi* begins to transmit in the imperceptible state, which means the *Kāla Tattva* begins to transmit in the entire *Prakṛti*. This transmission leads to the stimulation of *Sattva* etc., the three attributes; this is the *Mahat* state. Alternatively, it can be understood as, when the *Parā 'Om' Raśmi* activates *Sattva* and *Rajasa* only the

two attributes, then the *Prakṛti* takes the form of *Kāla Tattva*; and when the *Parā 'Om' Raśmi* (*Kāla Tattva*) stimulates all the three attributes of the *Prakṛti*, then it takes the form of *Mahat-Tattva*.

This *Mahat-Tattva* is uniformly dispersed in the empty space (*Avkāśa*), and generally, there are no fluctuations in this state. The *Parā* form of *'Om' Raśmi* is concurrently distributed in the entire matter, due to which all three attributes are activated. This causes a very mild glow in it, which is not present anywhere else in the entire cosmos. *Mahat-Tattva* has more profound darkness than the darkness we observe in the cosmos. The *Ahankāra*, which is the advanced state of the *Mahat-Tattva*, also has intense darkness. At this stage, no subtle *Raśmi* except the *Parā* form of *'Om' Raśmi* is able to emerge.

5.3 *Manas-Tattva*

When the *Paśyantī* form of *'Om' Chanda Raśmi* transmits into the pervading *Ahankāra Tattva*, then that state of *Ahankāra Tattva* is known as *Manas-Tattva*. *Mana*, too, is pervading like *Mahat* or *Ahankāra*. It pervades inside and outside of all the things that originate from it. This material combines with *Paśyantī* form of *'Om' Raśmi* and holds it.

The essence of *Manas-Tattva* is *Paśyantī* form of *'Om' Raśmi*, and all the actions originate from this *'Om' Raśmi*. In reality, due to this *'Om' Raśmi*, the *Manas-Tattva* gets activated, or the *Ahankāra Tattva* gets transformed to *Manas-Tattva*. If *Mahat-Tattva* and *Manas-Tattva* are considered subtle energy, then it seems that this invisible and imperceptible energy is of negligible strength, homogeneously dispersed everywhere. Its *Raśmi*s are of approximately zero frequency and infinite wavelength. Hence, this *Tattva* too remains static and pervades everywhere. The combination and separation in the *Manas-Tattva* are initiated due to *Paśyantī 'Om' Raśmi*. This *'Om' Raśmi* makes the *Manas-Tattva* capable of initiating the creation process, i.e. activates it.

This way, the entire '*Avkāśa*' form of space or emptiness gets filled with the combination of *Manas-Tattva* and *Paśyantī 'Om'*. At this stage, some noticeable glow and fluctuations are present, but, technically they are imperceptible by humans perspective. Now, the *Manas-Tattva* is capable of creating the subsequent materials. In this, the homogeneity is not disturbed, but the situation is conducive for it. For example, an agricultural field is ploughed and is made ready to sow the seeds. Similarly, *Manas-Tattva* is ready to create the next level of *Paśyantī Raśmi*s, and in future, the process of creation of subsequent materials

will begin.

5.4 The process of vibrations in *Manas-Tattva*

At first, in *Manas Tattva*, subtle magnitude vibrations originate and are divided into seven parts like *Daivī*, *Gāyatrī* etc. Later the vibrations of higher magnitude originate. These vibrations exist separately in imperceptible form even though they are swift and are mutually connected in an extensive complex manner. Like in a pond, if many stones are thrown, they all generate individual waves, but all these waves always exist independently even though they seem to crisscross and overlap each other (fig. 5.2).

Figure 5.2 Waves in water

Similarly, many electromagnetic radiations are generated in this cosmos that interfere and create a situation of 'superposition' for a short time; they move in different directions with very high velocity, even then they exist independently. If this were not the case, there would have been chaos in the entire cosmos and light, sound and telecommunications systems would have collapsed.

Likewise, the various vibrations in the form of *Chanda Raśmi*, produced in the *Mahat-Tattva* during the initial phases of the cosmos, are in a swift motion and interfere with each other but still exists independently. If this were not the case, then the vibrations would have destroyed each other, and no 'creation' activity could have started or continued.

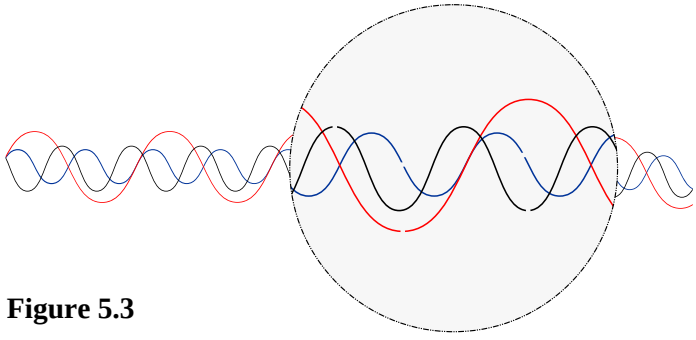

Figure 5.3

There is a tiny pause at the midpoint of various *Chanda* vibrations (fig. 5.3).

Due to this pause, several *Marut Raśmi*s get generated. How are they generated is still to be explored? These *Marut Raśmi*s have four types of motion. We can understand this pause by the structure of *Ved Mantrā*s. Let us take the example of the famous *Gāyatrī Mantrā*.

tatsaviturvareṇyaṁ. bhargo devasya dhīmahi.
dhiyo yo naḥ pracodayāt..

Here '**.**' is a pause, where very subtle *Marut Raśmi* (*Him* and *Vyāhṛti* etc.) are generated.

Later, many elementary particles are generated from these *Chanda Raśmi*s, which have four main attributes-

(a) Charge
(b) Mass
(c) Rotation
(d) Mobility

These all originate in *Manas-Tattva* due to those vibrations. Which are those vibrations? What are their features? We will discuss these in subsequent chapters.

You learnt in this Chapter

- ✓ After *Kāla*, *Mahat-Tattva* is the first to originate.
- ✓ The excited state of *Mahat* is *Ahankāra,* and the excited state of *Ahankāra* is *Mana.*
- ✓ Until the creation of *Ahankāra*, no electrical charge, mass, space, wave, particle etc. are formed.
- ✓ When *Kāla Tattva* transmits the *Paśyantī 'Om' Raśmi* in the *Ahankāra*, then that state is *Manas-Tattva*.
- ✓ In *Manas-Tattva*, various vibrations of *Chanda Raśmi* interfere but still exist independently.
- ✓ *Mahat-Tattva* or *Manas-Tattva* can be considered as approximate zero,

invisible, homogeneous and of imperceptible energy.

EXERCISES

1. Which is the primary material of the cosmos that gets distorted and used to create this cosmos? Explain its features.
2. What is the difference between *Mahat*, *Ahankāra* and *Manas-Tattva*? Explain with example.
3. Who initiates the vibrations in *Manas-Tattva*?
4. Does space, energy and elementary particles etc., as described by modern science, exist in *Manas-Tattva* or not? Explain with reasoning.
5. Is the volume of *Manas-Tattva* more or less as compared to the cosmos?
6. Do *Mahat*, *Ahankāra* and *Manas-Tattva* presently exist?
7. What is the relation among *Mahat*, *Ahankāra* and *Manas-Tattva*?
8. When does the *Prakṛti* transform into *Mahat-Tattva*?
9. How many types of *Ahankāra* are there?
10. When does *Ahankāra* converts into *Manas Tattva*?
11. What is '*Kāraṇa Vidyut*'?
    - (**a**) *Manas Tattva*
    - (**b**) *Mahat-Tattva*
    - (**c**) *Ahankāra Tattva*
    - (**d**) *Kāla Tattva*

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CHAPTER 6

Raśmis and their Properties

According to *Vaidic Raśmi* theory, all elementary particles and various quanta as described by modern science originate due to the compaction of *Vaidic Mantrā*s. These *Mantrā*s are still present in the cosmos in the form of *Paśyantī Vāṇī*. If someday a technique is developed that can detect the *Paśyantī* sound, we may be able to listen to the *Ved Mantrā*s in rhythm. In the cosmos, various *Chanda Raśmi*s do not exist alone but in groups. When these *Raśmi* groups drift separately and independently, then they are in the form of '*Ākāśa*' (space). However, when these *Raśmi* groups are joined together with a few *Chanda Raśmi*s and become denser, then these groups acquire the form of elementary particles, and when these groups acquire the intermediate state above, they create various types of quanta.

In this chapter, we will learn about the classification and properties of these *Raśmi*s. Also, to understand the subsequent chapters, it is essential to know about the properties of these *Raśmi*s.

6.1 *Akṣara Raśmi*s

All *Raśmi*s are composed of a kind of subtle constituent, *Akṣara*. Therefore, let us understand these *Akṣara*.

Figure 6.1

Mahat-Tattva is a form of vibration of these *Akṣara*s. At the time of origin of the *Kāla*, in the equilibrium state, the *Akṣara Raśmi*s are formed in the imperceptible state; which gets manifested as soon as the *Parā* form of *'Om' Raśmi* transmits. These *Raśmi*s never cease to exist, even in the state of *Mahāpralaya* (absolute dissolution). These acquire *Chanda* form only when they transform into *Śabda* (word). An analogy can be drawn of letters in a computer's screen where the letters are invisible or latent, but as soon as the letter on the keyboard

is pressed, they are visible (fig 6.1). Similarly, the latent *Akṣara* in *Mahāpralaya* is manifested by the transmission of *'Om' Raśmi*. *Akṣara Raśmi*s are of two types-

1. ***Svara*** – These small *Raśmi*s are self-initiated, which means these do not need *Vyañjana*s for activation; however, these cannot traverse long distances continuously. In *Manas-Tattva*, these exist in the form of very subtle vibrations.
2. ***Vyañjana*** – These imperceptible and subtlest constituents are also a form of *Mahat-Tattva*, that are able to come in motion only when combined with *Svara*. The *Vyañjana*, which is created by a sudden but subtle disturbance in the *Mahat* or *Ahankāra* and remains in one place, gets transformed into the imperceptible form of speed, force and light when combined with *Svara*. It combines with *Svara* to form a subtle *Chanda*. *'Om'*, *Bhūḥ*, etc. *Chanda Raśmi*s are an example of it.

Like the pearls combine together to form a necklace, similarly, *Akṣara* and *Vyañjana Raśmi*-s combine to form bigger *Chanda Raśmi*-s (*Ṛcā* or *Mantrā*).

$$Om = A + U + M$$

There is a combination of two *Svara*s (vowels) and one *Vyañjana* (consonant). Even though M can combine separately with the two *Svara*s to form '*AM*' and '*MA*' and '*UM*' and '*MU*' *Chanda*, but the combination of '*A*'+ '*U*' = *O* and then combining with '*M*' to form *'Om' Chanda Raśmi* is most powerful with the highest mobility. In *'Om' Chanda*-

- The quantity of *Manas Tattva* or *Mahat-Tattva* is highest compared to any other *Chanda* like *Gāyatrī*, and for this reason, it is most extensive.
- It is the root of all other *Raśmi*s. All *Prāṇa* and *Chanda Raśmi*s originate and are stimulated from it.
- This *Raśmi* stimulates the *Manas-Tattva* and creates all other *Raśmi*s and materials.
- This *Raśmi* not only creates the entire cosmos but also binds it together. In *Manas-tattva*, it exists in *Paśyantī* form while in *Mahat* and *Kāla*, it is in *Parā* form.

These vibrations in the *Mahat* or the *Manas-Tattva* are so subtle that they are not felt like vibrations, or they can be called a wave with zero frequency and infinite wavelength. The reality is, it is impossible to express or describe it. Further, in the language of science, it can be termed a form of the weak and initial form of energy, which is imperceptible and very subtle.

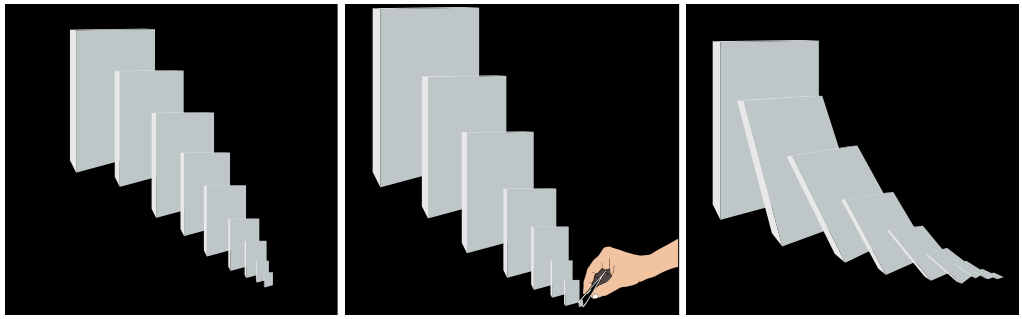


Figure 6.2 Falling of bigger block gradually by small block

It should be remembered that subtler energy controls grosser energy. For example, the mind uses minimal energy to control the body, which can generate a vast amount of energy.

6.2 *Prāṇa* and *Chanda Tattva*

When the intensity of the *Paśyantī* form of *'Om' Raśmi* increases, then the supreme conscious entity through *Kāla Tattva* makes the entire vast ocean (of *Mahat-Tattva*, *Ahankāra* and *Manas-Tattva*) vibrate, which is homogeneous, using subtle *Paśyantī 'Om' Raśmi*s. For example, huge energy is creating subtle and gross waves in a vast ocean. Similarly, using *'Om' Raśmi*, the supreme conscious entity continuously generates vibrations of *Prāṇa* and *Chanda Raśmi*s in *Manas-Tattva*.[4] When this process begins, it happens suddenly at a very high speed. These waves (*Raśmi*s) are of 4 main types-

(a) *Mūla* (Elementary) *Chanda Raśmi*s
(b) *Prāthamika* (Primary) *Prāṇa Raśmi*s
(c) *Māsa* and *Ṛtu Raśmi*s

[4] All *Prāṇa Raśmi*-s gets converted into Dark energy without being in association with '*Om' Chanda Raśmi*.

(d) Other *Chanda* and *Marut Raśmi*s

(A) *Mūla* (elementary) *Chanda Raśmi*s

After the formation of *Akṣara Raśmi*s, following Primary *Chanda Raśmi*s are formed-

Vyahṛti *Raśmi*s

Those *Raśmi*s which specifically attract other *Raśmi*s from surrounding or hold or carry them are called *Vyahṛti Raśmi*s.

Among the Primary *Chanda Raśmi*s, the first seven *Vyahṛti Raśmi*s originate from *Manas-Tattva* in the following order-

1. ***Bhūḥ*-** Immediately after the formation of *Paśyantī 'Om' Raśmi*, this *Vyahṛti Raśmi* is generated. In the *Manas-Tattva*, this *Vyahṛti Raśmi* is the first to originate. These *Raśmi*s dominate in *Ṛk*[5] *Raśmi*s, elementary particles, whenever they are formed. This *Raśmi* can accompany various other *Raśmi*s and restrict the subtle obstructive *Raśmi*s to make the activities smooth.
2. ***Bhuvaḥ*-** In the *Manas-Tattva, 'Om' Raśmi* distorts the '*Bhūḥ*' vibrations to create '*Bhuvaḥ*' *Raśmi*s. Later, these *Raśmi*s play a vital role in the creation of *Ākāśa* (space) and *Yajuḥ* named *Raśmi*s.
3. ***Svaḥ*-** In *Manas-Tattva*, the *'Svaḥ'* vibrations are created by *'Om' Raśmi*. In later stages, these play an important role in the creation of *Sāma Raśmi*s and Photons.
4. ***Mahaḥ*-** This *Raśmi* plays an essential role in combining other *Vyahṛti Raśmi*s.
5. ***Janaḥ*-** In general, this *Raśmi* originated everywhere in other *Raśmi*s and produced *Chanda Raśmi*s by combining them. This *Raśmi* is highly capable of restricting the obstructive *Raśmi*s.
6. ***Tapaḥ*-** This *Raśmi* remains at the outer edge of other *Vyahṛti Raśmi*s and pervades in outer areas to protect them.
7. ***Satyam*-** This *Raśmi* pervades and combines with all other *Raśmi*s and provides them base by staying on their outer regions.

Maharṣi Aitaraiya Mahīdāsa has said that *Vyahṛti Raśmi*s help in

[5] These *Raśmi-s* will be discussed later.

combining and protecting various *Veda Ṛcā* type *Chanda Raśmi*s. Their absence will lead to the weakening or destruction of various *Chanda Raśmi*s and particles, waves, space (*Ākāśa)* etc. created by them.

(B) *Prāthamika* (Primary) *Prāṇa Raśmi*s

After the aforementioned subtle *Raśmi*s, the Primary *Prāṇa Raśmi*s are generated. Mentioning about these, *Maharṣi Yājñavalkya* had said that all *Prāṇa Raśmi*s are never stationary, i.e. they are in continuous motion. All *Prāṇa Raśmi*s are the collection of *Akṣara*s.

Prāṇa Tattva controls like a rope and is generated by the combination of *Manas-Tattva* and the *'Om' Raśmi*s. *Prāṇa Tattva* is only one but is grouped into various forms due to its variety of motions. According to *Maharṣi Vyāsa*, due to seven types of motions, the *Prāṇa* is classified into seven types (*Prāṇa*, *Apāna*, *Vyāna*, *Udāna*, *Samāna*, *Sūtrātmā Vāyu* and *Dhanañjaya*). These are primary *Prāṇa*. However, in reality, these *Raśmi*s are of 11 types. The variations in the intensity, movement and properties of vibrations in *Manas Tattva* and *Ahankāra* caused by *'Om' Raśmi* results in 11 forms of one *Prāṇa*. Let us understand these-

1. *Sūtrātmā Vāyu* – The *Sūtrātmā Vāyu Raśmi*s have the special property to combine the various *Prāṇa Raśmi*s. After *'Om' Raśmi*, *Sūtrātmā Vāyu Raśmi*s play a leading role in binding the entire cosmos together. Inside the *Manas Tattva*, these are originated by *'Om' Raśmi* in the form of imperceptible vibrations, which are intertwined together like a web. These *Raśmi*s are generated so that every *Raśmi* emits a subtler *Raśmi* and forms a web.

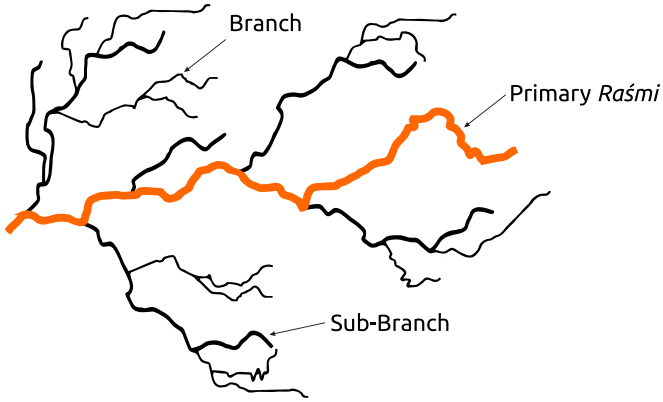


Figure 6.3 Subtle branch and sub-branch of *Sūtrātmā Vāyu*

This way *Sūtrātmā Vāyu Raśmi*s binds all other *Raśmi*s etc. materials together with itself by using the subtle branch – subbranch of subtle *Raśmi* (vibrations). A similarity has been drawn between *Sūtrātmā Vāyu* and a thread, which binds all the particles and the *Raśmi*s together. When *Sūtrātmā Vāyu Raśmi*s blend *Dhanañjaya Raśmi*s, then the intensity of *Sūtrātmā Vāyu* increases. There is no repulsive force in *Sūtrātmā Vāyu*.

2. *Dhanañjaya* – These *Raśmi*s are generated as the fastest vibrations in the *Manas-Tattva*. These travel at four times the speed of light. If the speed of light is assumed to be 3×10^8 m/s, these travel at 12×10^8 m/s. In this entire cosmos, no other material travels as fast as this. Here you may have a question that according to scientist Albert Einstein, nothing can travel faster than light, then how *Dhanañjaya Prāṇa* can travel faster than light? Is it not against the 'Theory of Relativity'? To answer this, the defined speed of light has been considered to be in space, while *Dhanañjaya Raśmi* is even subtler than space and does not need space to travel, as it travels in *Manas-Tattva*. This way, it does not violate the 'Theory of Relativity'.

When this *Raśmi* combines with or covers any particle or other *Raśmi*, they acquire very high velocity. Light or any other magnetic waves are pulled by these *Dhanañjaya Raśmi*s; they are fast and highly powerful. While these *Raśmi*s are the cause of the fast-moving electromagnetic waves and other particles, these combine with *Sūtrātmā Vāyu* to spin the particles on their axis.

3. *Prāṇa* – Among all primary *Prāṇa*s, these *Prāṇa Raśmi*s are considered to be of the highest order, and all other *Prāṇa Raśmi*s is named after it. When in *Manas-Tattva*, *'Om' Chanda Raśmi*s move with high velocity and force, then the *Raśmi*s generated, due to the vibrations so produced, are called as *Prāṇa Raśmi*s. Attractive forces are dominant in these. It travels from inside to outside in particles and waves as it induces attraction in them by being attractive to them. In this cosmos, wherever attractive forces exist, they are necessarily present as the force's root cause. For *Prāṇa Tattva*, *Maharṣi Vyāsa* has said

prāṇaḥ kampanāt (*Brahma Sūtra* 1.3.39)

It is clear from this that *Prāṇa* is subtle vibrations. It is to be remembered that this applies to all *Prāṇa Raśmi*s and not just this *Prāṇa only*.

4. *Apāna* – This *Raśmi* is a type of vibration by *'Om' Raśmi* in *Manas-Tattva*

whose motion is just opposite to the Primary *Prāṇa Raśmi* and has the tendency to separate the various vibrations. *Prāṇa* and *Apāna* exist together but vibrate in opposite directions. Hence these *Apāna Raśmi*s are the leading cause of the origin of repulsive forces. These *Raśmi*s have an attraction towards *Prāṇa Raśmi*s. In *Prāṇa Raśmi*s, *Sattva* dominates while *Rajasa* dominates in *Apāna Raśmi*s. Due to this reason, *Prāṇa* and *Apāna* dominate in force and action, respectively.

In reality, these two types of *Raśmi*s are combined with each other, and their separation is not observed. Due to their combined effect, every material is endowed with both force and action. When there is a predominance of *Prāṇa* and *Apāna* is minor, then the attractive force in that material is high, but the mobility is less. When *Apāna* is dominant and *Prāṇa* is minor, mobility is high while force is less.

In this cosmos, all forces are present in the form of attractive and repulsive forces, but in gravitational pull, attraction dominates. Therefore, in this force, *Prāṇa Raśmi*s dominate while *Apāna* is non-dominating. Thus, from a mobility point of view, the material with high gravitational force or mass will be less active. From this point of view, the inferiority or non-existentiality of *Apāna* is proved here. On the other hand, only the force of attraction is present in the gravitational force *Raśmi*s, but the activity of those *Raśmi*s is very less. Due to this reason, the gravitational force is very weak.

Question- When *Prāṇa* and *Apāna* exist as a pair, how can we explain the dominance of one over the other?

Answer- In pair, too, one can be powerful, and the powerful one is dominating. Like in some species, the male dominates, while in others, females dominate.

5. *Vyāna* – These *Raśmi*s are generated in *Manas-Tattva* by *'Om' Raśmi*s in such a way that they can act as a link between *Prāṇa* and *Apāna*. Without *Vyāna Raśmi*, *Prāṇa* and *Apāna* cannot interact with each other. *Vyāna Raśmi*s play a vital role in not only linking *Prāṇa* and *Apāna* but uniting other *Raśmi*s and particles too with *Prāṇa* and *Apāna*.

In the formation of illumined particles, *Vyāna Raśmi*s spread the *Apāna Raśmi*s to give a much lower concentration to the illumined particles than the non-illumined particles. When the *'Om' Raśmi* vibrates twice and combines each other, then it generates the primary (*Prāthamika*) *Prāṇa Raśmi* named as *Vyāna*.

6. *Samāna* – In *Manas-Tattva*, when *'Om' Raśmi*s vibrate with constant speed and force, then it gives rise to *Samāna Raśmi*s (a type of *Prāṇa Raśmi*). These *Prāṇa Raśmi*s maintain the equilibrium of force and speed among various other *Prāṇa Raśmi*s, especially playing an important role in maintaining the equilibrium in *Prāṇa* and *Apāna Raśmi*s. These *Raśmi*s keep on moving continuously with the same rhythm.

7. *Udāna* – When in *Manas-Tattva*, the vibrations are produced in such a way that they induce upward force (as thrust in upward direction) in *Manas-Tattva;* at that time, the vibrations generated have upward motion. While the movement of these *Raśmi*s creates a kind of pull in the *Manas-Tattva*, the *Udāna* vibrations produced have upward motion. This *Raśmi*s help generate an upward force (means opposing force against applied force, e.g., a frictional force is generated when a force is applied on a body) in various *Raśmi*s. *Udāna Raśmi*s move with regular and controlled rhythm and generate a specific glow at an extensive level.

8. *Nāga* – This is sub-*Prāṇa* or *Upa-Prāṇa* of *Prāṇa Tattva* named as *Prāṇa*, which helps in controlling and organizing *Prāṇa Raśmi*s when they become disorganized. Heat is produced and intensifies when *Nāga Raśmi*s dominate. Its vibrations are very subtle and slow and can be considered stationary compared to other *Prāṇa Raśmi*s.

9. *Kūrma* – These *Raśmi*s are sub-*Prāṇa* or *Upa-Prāṇa* of *Apāna Raśmi*s, which provide stimulation and power to *Apāna Raśmi*s. As we know that repulsive force dominates in *Apāna Raśmi*s, even then they are joined with *Prāṇa Raśmi*s through *Vyāna Raśmi*s. Just like a tortoise, this *Kūrma* sub-*Prāṇa* is capable of converging the *Apāna Raśmi*s in combining process. Like the head controls the entire body. Similarly, *Kūrma Raśmi*s play a role in maintaining a control between *Prāṇa* and *Apāna*.

10. *Kṛkala* – This *Prāṇa* is sub *Prāṇa* or *Upa-Prāṇa* of *Udāna*. *Prāṇa Tattva*, which has penetration capabilities and provides, or itself gets speed. Whenever there is any hindrance in the upward force in *Udāna Raśmi*s, then in *Manas-Tattva*, *Kṛkala Raśmi* are suddenly generated by *'Om' Raśmi*s to provide power to *Udāna Raśmi*s by pushing them to make upward force active and unhindered.

11. *Devadatta* – This is sub *Prāṇa* or *Upa-Prāṇa* of '*Samāna Prāṇa*'. It is very much evident that *Samāna Prāṇa Raśmi*s help in maintaining balance between

Prāṇa and *Apāna Raśmi*s. These *Raśmi*s vibrate along with the rhythm of *Samāna Prāṇa Raśmi*s and maintain the rhythm of *Prāṇa* and *Apāna*.

Note: The movement of various sub-*Prāṇa* or *Upa-Prāṇa Raśmi* (vibrations) are opposite to the respective *Prāṇa Raśmi*, and their vibrations are much subtler than the respective *Prāṇa Raśmi*s, that continuously originate near them.

(C) *Māsa* and *Ṛtu Raśmi*s

***Māsa Raśmi*s**

It is a name of the group of *Raśmi*s which are formed from the 30 vibrations of *Prāṇa* and *Apāna Raśmi*s jointly. There are 30 pairs of *Prāṇa* and *Apāna* in one *Māsa*. (Do remember that it does not mean that there are 30 *Prāṇa* and 30 *Apāna Raśmi*s adding to 60 as it is, but in reality, the combined resultant vibration of these 60, gives rise to *Māsa Raśmi* which is completely different from them; in other words, these 60 vibrations transform into a new form. Likewise. wherever there is a discussion on the formation of *Raśmi*s by combining many *Raśmi*s, it has to be understood as above.) Thirty pairs of *Prāṇa* and *Apāna Raśmi*s specifically combine in twelve ways to form twelve types of *Māsa Raśmi*s. If this were not the case, then only one type of *Māsa Raśmi* would have been formed. The cosmos, the stars and other celestial bodies of the cosmos would not have been formed without these *Māsa Raśmi*. These *Raśmi*s work to combine other *Raśmi*s.

These *Raśmi*s help in the combining with each other by exciting the specific points of various *Raśmi*s, which behave in the form *Yoṣā* (male) and *Vṛśā* (female). The twelve types of *Māsa Raśmi*s are-

1. *Madhu*
2. *Mādhava*
3. *Śukra*
4. *Śuci*
5. *Nabhas*
6. *Nabhasya*
7. *Īṣ*
8. *Ūrj*
9. *Sahas*
10. *Sahasya*
11. *Tapas*

12. *Tapasya*

***Ṛtu Raśmi*s**

Ṛtu is a material that exists in the form of *Raśmi*s. A pair of two *Māsa Raśmi*s constitute a *Ṛtu Raśmi*. *Ṛtu Raśmi*s gives rise to directions means they help in the indication of the direction of rotation of various celestial bodies and particles. Moreover, all created materials are called as *Ṛtu* too as they are always in motion.

*Ṛtu Raśmi*s play an essential role in creating light and the association and disassociation of particles and quanta. Their interaction with any material increases the heat. These *Raśmi*s are present in abundance in the core of the stars where the energy is generated. These are also found in abundance in the large outer parts of the stars. *Ṛtu Raśmi*s quickly absorb various *Prāṇa Raśmi*s, and due to this, any material, which interacts with them quickly absorbs heat. These *Raśmi*s are highly capable of synthesizing or covering other *Raśmi*s.

Six *Ṛtu Raśmi*s are as follows-

1. *Vasanta* (*Madhu* + *Mādhava*)
2. *Grīṣma* (*Śukra* + *Śuci*)
3. *Varṣā* (*Nabhas* + *Nabhasya*)
4. *Śarad* (*Īṣ* + *Ūrj*)
5. *Hemanta* (*Sahas* + *Sahasya*)
6. *Śiśira* (*Tapas* + *Tapasya*)

(D) Other *Chanda Raśmi*s

***Kāla* measuring *Raśmi*s**

Kāla Tattva is a material that has the complete absence of *Tamoguṇa*. Barring *Kāla Tattva*, *Kāla* measuring *Prāṇa*, *Apāna*, *Udāna*, *Māsa* and *Ṛtu Raśmi*s are the *Raśmi*s that do not have a complete absence of *Tamoguṇa*. *However,* its quantity is so minuscule that they flow continuously and unhindered. While these are not like *Kāla*, which flows unhindered and continuous ever, but have this feature when compared with other *Raśmi*s. Let us now learn how they are understood to measure the *Kāla*.

1. *Prāṇa*- That duration in which one vibration of *Prāṇa* titled *Prāṇa Raśmi* is

completed, is called 'One *Prāṇa*' or *Ahan*. This *Raśmi* is formed from *Akṣara*s. Each *Akṣara*s vibrates one after the other. The combined vibration of all six vibrations is called *Prāṇa Raśmi* (*Ahan*). *Prāṇa* is made of six subtle vibrations of *Ṛtu Raśmi*s (*Bhūḥ*, *Bhuvaḥ*, *Svaḥ* and *'Om'*). '*Ṣadṛtunā*' *Daivī Paṁkti Chanda Raśmi* originates and combines with 6 *Ṛtu Raśmi*s to give rise to *Prāṇa Tattva*.

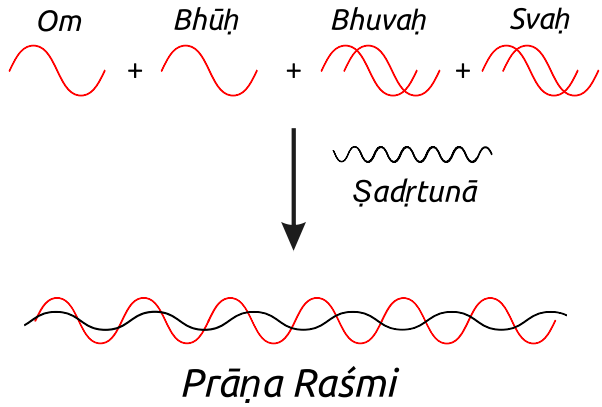


Figure 6.4 Formation of *Prāṇa Raśmi*

Modern physicists consider 9,19,26,31,770 cycles of Cesium-133 atom transition as one second, but one cannot say that second is the time. In reality, it is the method to measure time. Meter, kilometre etc., are methods to measure space. Similarly, while *Prāṇa*, *Apāna*, etc. are substance (*Raśmi*s), these expressions are also used to measure *Kāla*[6].

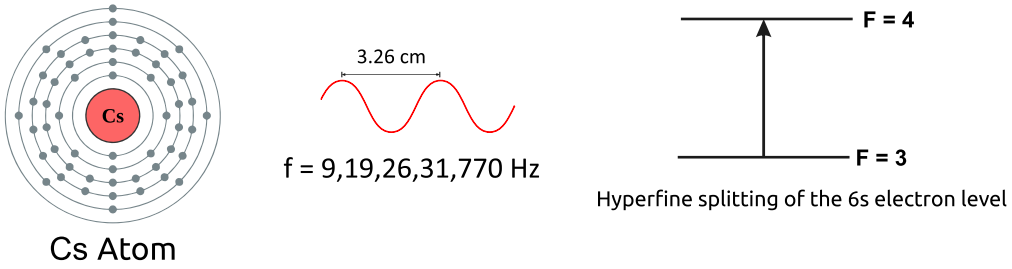


Figure 6.5

2. *Apāna*- The duration of 'one vibration' of an *Apāna Raśmi* is the time of

[6] It is a matter of research that how much time it takes in one *Prāṇa* and one *Apāna* vibration according the modern time calculations.

Apāna. This *Raśmi* is formed from 4 vibrations each of 4 *Ṛtu Raśmi*s, totalling to sixteen *Ṛtu Raśmi*s. Here in the (fig.6.5), each *Vyāhṛti* is considered to be *Ṛtu Raśmi*.

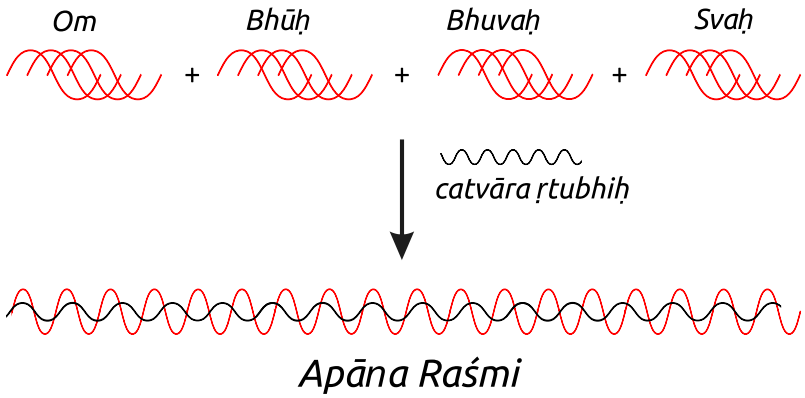


Figure 6.6 Origination of *Apāna Raśmi*

Like above, if one *Akṣara* is assumed to be one *Ṛtu Raśmi*, then barring '*Svaḥ*', the sixteen *Akṣara*s of the four vibrations of the rest three *Raśmi*s will form an *Apāna Raśmi*.

***Ṛśi Raśmi*s -**

Several *Prāṇa Raśmi*s that are formed from various very subtle *Raśmi*s is called as *Ṛśi Raśmi*s. These *Ṛśi Raśmi*s generate, hold and activate various types of *Chanda Raśmi*s (a form of *Mantrā*). These *Ṛśi Raśmi*s play a supportive role in whatever the *Chanda Raśmi*s, do in this cosmos.

Note: The properties and classification of other *Chanda Raśmi*s will be given in the next chapter.

6.3 The seven types of effects of *Chanda Raśmi*s-

Following are the effects of any *Veda Mantrā* (*Chanda Raśmi*)

1. The effect of *Devatā* (*Devatā* is that material that is most affected by a *Chanda Raśmi*. For example, if the *Devatā* of any *Raśmi* is *Indrā*, then

that *Raśmi* will enhance *Indrā*, i.e. electricity.)

2. The effect of *Chanda* (Read the next chapter about *Chanda*)
3. The effect of *Ṛśi* (The *Chanda Raśmi* will have some properties of *Ṛśi* from which it is formed.)
4. The effect of *Svara*
5. The effect of *Pada* (means the effect of words)
6. The effect of *Akṣara*
7. The effect of complete *Ṛcā*/*Chanda Raśmi*/*Mantrā*

6.4 The process of synthesis of *Raśmi*s

Various *Prāṇa Raśmi*s are like very subtle imperceptible threads whose both ends have different properties. Like the poles of a magnet have opposite property but when brought closer, they attract and join with each other. Similarly, the ends of the *Raśmi*s also get attracted and join together. These ends join like the ends of a rope. In between these ends, very subtle and *Daivī Gāyatrī Chanda Raśmi*s are continuously transmitted. These two ends of various *Prāṇa Raśmi*s are the cause of various forces and activities. These ends make the regulation and operation of these forces and activities with the help of subtle *Vāk Raśmi*s.

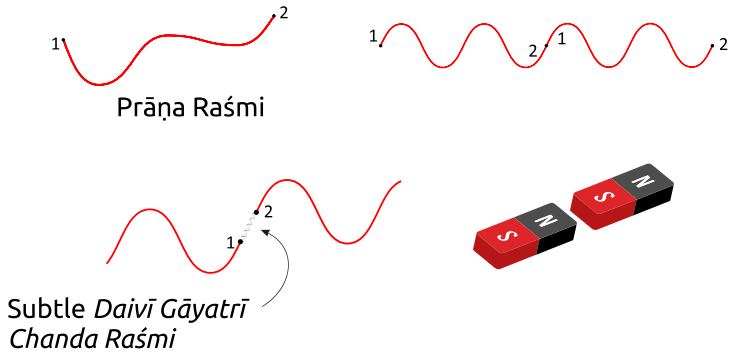


Figure 6.7 Joining process of anti-nature ends of *Raśmi*-s

These subtle *Raśmi*s are continuously transmitted in imperceptible form between these ends and based on this theory, the entire cosmos is created. It is to be remembered that imagining them as 'threads' does not imply that these are dense or solid. In reality, these are subtle vibrations in the *Manas-Tattva*, just like waves in the water. Their ends join just like these waves.

6.5 Is the number of *Raśmi*s finite or infinite?

In the cosmos, while the numbers of *Chanda Raśmi*s by features are finite, but due to their recurrence, their number becomes infinite; just like a guitar or violin has few strings, but repetition of their vibrations can produce infinite sounds. The number of elementary particles is also limited by properties, but they are infinite by total count.

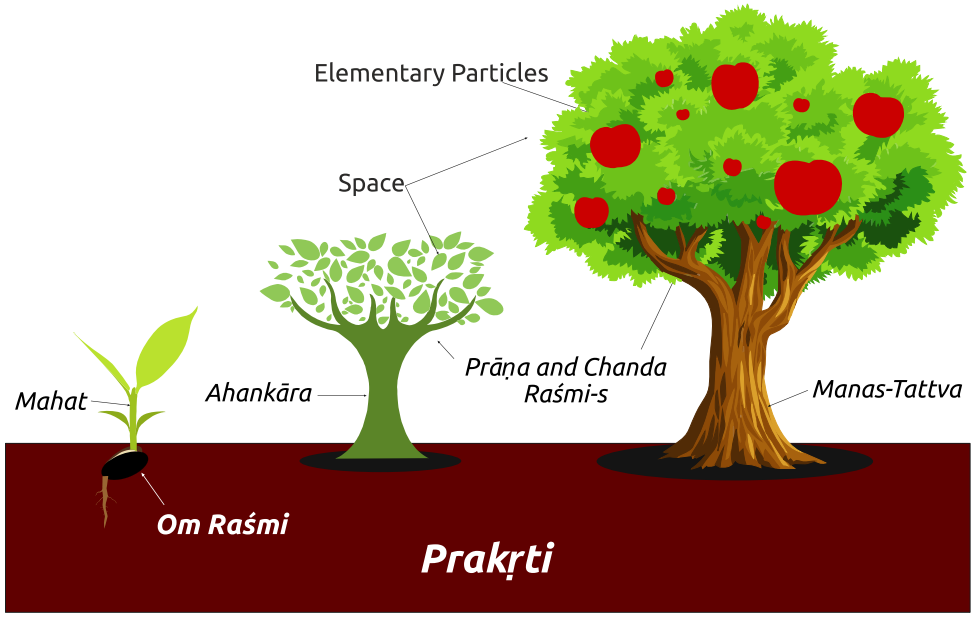
Likewise, the elementary particles existing in the form of celestial bodies in this cosmos are very few compared to elementary particles dispersed in this cosmos. The limited number of elementary particles and atoms in this cosmos gives rise to infinite molecules. Here too, the difference lies only in the quantity and recurrence of these particles and atoms.

The *Prāṇa* titled *Prāṇa* and *Chanda Raśmi*s help in the formation of *Ākāśa Tattva* and mainly contributed in generating heat too. The age of various particles is based on the arrangement of these *Raśmi*s. The subtle *Prāṇa Raśmi*s cannot be identified by any physical means, but when they are in the form of leptons and quarks, only then they are detectable. These leptons, quarks etc. are filled with various *Prāṇa*, *Chanda* etc., types of *Raśmi*s. While, all the activities and the forces of *Prāṇa*, *Chanda* etc. *Raśmi*s are invisible to physical techniques. Even then, they are invisibly and compulsorily present in the visible forces and activities. In the absence of these, neither forces nor other activities can ever exist, nor can any other material manifest.

You learnt in this Chapter

- ✓ All the elementary particles and various quanta are formed from the compaction of *Vaidic Mantrā*. These *Mantrā*s still exist in the cosmos in *Paśyantī* form of *Vāṇī*.
- ✓ When *Raśmi* groups drift separately and independently, then they are in the form of *Ākāśa*.
- ✓ When these *Raśmi* groups are joined together by some *Chanda Raśmi*s and become denser, they acquire the form of elementary particles.

- When these *Raśmi* groups acquire the form in between, they form various quanta.
- *Mahat-Tattva* is in the form of the vibrations of *Akṣara*s.
- During the formation of *Kāla* in the equilibrium state, the seed of *Akṣara Raśmi*s is formed in the imperceptible form, which is expressed as soon as the *'Om' Raśmi* is transmitted in *Parā* form.



- *'Om' Chanda Raśmi* is the root of all other *Raśmi*s. All *Prāṇa* and *Chanda Raśmi*s originate and are influenced by it.
- Only subtlest energy can control the gross energy.
- Those *Raśmi*s which specifically attract or carry other *Raśmi*s from surroundings are called as *Vyahṛti Raśmi*s. These are of 7 types (*Bhūḥ*, *Bhuvaḥ*, *Svaḥ*, *Mahaḥ*, *Janaḥ*, *Tapaḥ* and *Satyam*).
- All *Prāṇa Raśmi*s are never stationary, i.e. they are in continuous motion. Due to 7 types of movements, the *Prāṇa* is of 7 kinds (*Prāṇa*, *Apāna*, *Samāna*, *Udāna*, *Vyāna*, *Sūtrātmā Vāyu* and *Dhanañjaya*)
- *Māsa* is a term given to particular types of *Raśmi*s (*Madhu*, *Mādhava*, *Śukra*, *Śuci*, *Nabhas*, *Nabhasya*, *Īṣ*, *Ūrj*, *Sahas*, *Sahasya*, *Tapas* and *Tapasya*), which are formed from the 30 vibrations jointly of *Prāṇa* and *Apāna*. Thus, there are 30 pairs of *Prāṇa-Apāna* in one *Māsa*.

- ✓ The cosmos and other celestial bodies cannot be created without the *Māsa Raśmi*s. These help to join various other *Raśmi*s.
- ✓ *Ṛtu* is a material that exists in the form of *Raśmi*s (*Vasanta, Grīṣma, Varṣā, Śarad, Hemanta and Śiśira*). A pair of *Māsa* is a *Ṛtu*.
- ✓ *Ṛtu Raśmi*s form the *Diśā* (directions), i.e. due to them, the direction of rotation of various celestial bodies and particles is determined. They specifically contribute to the generation of light.
- ✓ *Tamoguṇa* is the least in *Prāṇa, Apāna, Udāna, Māsa* and *Ṛtu Raśmi*s. These *Raśmi*s flow continuous and unhindered as compared to other *Raśmi*s.
- ✓ The duration gap in which a *Prāṇa Raśmi* titled as *Prāṇa* vibrates once is called as *Prāṇa* or *Ahan*.
- ✓ The time duration in which an *Apāna Raśmi* vibrates once is termed as *Apāna*.
- ✓ In this cosmos, various *Prāṇa Raśmi*s that originate from different subtle *Raśmi*s are called *Ṛśi Raśmi*s.
- ✓ Different *Prāṇa Raśmi*s are similar to the subtle piece of the thread whose both ends have different properties.
- ✓ *Chanda Raśmi*s are finite in number by features but are infinite due to recurrence in this cosmos.

EXERCISES

1. What is *Raśmi*? What are *Akṣara Raśmi*s? What are their types?
2. Which is the essential *Raśmi* in this cosmos, and what is its feature?
3. How many types of *Raśmi*s are there? Name them.
4. How many types of *Vyahṛti Raśmi*s are there, and what are their properties?
5. How many types of *Prāthamika* (primary) *Prāṇa* are there? Which is the most subtle of them?
6. Write down the properties of *Dhanañjaya Raśmi*.
7. Describe in detail the features of *Prāṇa* and *Apāna*.

8. Which *Prāṇa* has been compared with a tortoise?
9. Which *Prāṇa* is the fastest and which *Prāṇa Raśmi* is the slowest? Explain their properties too.
10. What are *Māsa* and *Ṛtu Raśmi*s? How many types of these *Raśmi*s are there? Name them.
11. What is the main role of *Ṛtu Raśmi*s?
12. Explain the process of origin of *Prāṇa*, *Apāna* and *Vyāna Raśmi*s.
13. What is the effect of *Veda Mantrā*s on the cosmos?
14. What does the *Raśmi*s resemble?

❋ ❋ ❋ ❋ ❋

CHAPTER 7

Classification of *Chanda Raśmis*

7.1 Preface

*Chanda Raśmi*s play a vital role in the origin of this cosmos. In reality, the entire cosmos is an interplay of *Chanda Raśmi*s. These vibrations are also called *Vāk* or *Prāṇa*, in other words, *Chanda Raśmi*s that vibrate in the *Manas Tattva* are termed as *Vāk* or *Prāṇa Tattva*. *'Om'*, '*Bhūḥ*', '*Bhuvaḥ*', '*Svaḥ*' etc. *Chanda Raśmi*s and *Prāthamika Prāṇa Raśmi*s are all subtle vibrations in the *Manas Tattva*.

*Chanda Raśmi*s-

- are the source of light
- are capable of engulfing or covering a particle or quanta completely
- produce and coordinate various forces
- behave like *Prāṇa Raśmi*s
- form the base of various particles, quanta and other celestial objects and hold them
- bind the entire cosmos

7.2 First type of classification

The supreme conscious entity (*Cetana Tattva*) with the help of *'Om' Chanda Raśmi* stimulates the *Manas Tattva* and generates various other *Chanda Raśmi*s. *Chanda Raśmi*s are of three types - *Ṛk*, *Yajuḥ* and *Sāma*. Along with the role of *Manas Tattva* and *'Om' Raśmi*s, '*Bhūḥ*', '*Bhuvaḥ*', '*Svaḥ*' respectively also play a leading role in the formation of these three *Chanda Raśmi*s. All these *Chanda Raśmi*s are generated in the form of such vibrations which, as soon as they originate, cover various *Prāṇa Raśmi*s and start forming pairs.

1. *Ṛk* - These *Raśmi*s possess a very subtle glow. These *Chanda Raśmi*s have an

important role in the formation of all elementary particles present in this cosmos. These *Ṛk* forms of *Chanda Raśmi*s dominate in Dark Matter and Dark Energy too.

When the material formed from these *Raśmi*s becomes denser and darker, it increases its attractive forces. These *Chanda Raśmi*s and *Sāma Raśmi*s are dominated by *Vāk Tattva* or *'Om' Raśmi*s (as compared to *Manas Tattva*). Due to this reason, both *Raśmi*s are specially equipped with forces. Hence, the *Chanda Raśmi*s possessing the above properties are *Ṛk Raśmi*s.

2. *Yajuḥ* - These *Chanda Raśmi*s play an important role in combining various materials. These are extensive and dominant in *Ākāśa Tattva* (space). All types of motions in this cosmos continuously happen inside these *Chanda Raśmi*s. Moreover, these *Raśmi*s too are in continuous motion. In these *Raśmi*s, instead of *Vāk Tattva* (*'Om' Raśmi*s), the *Manas Tattva* dominates. Due to this reason, these provide the base to other *Raśmi*s.

3. *Sāma* - All quanta and the so-called 'mediator particles' in this cosmos have a predominance of these *Raśmi*s. The total brightness of the cosmos is due to *Sāma Raśmi*s. These *Raśmi*s have extraordinary penetration power.

All *Chanda Raśmi*s titled as *Ṛk* have predominance *Bhūḥ Chanda Raśmi*s and other *Daivī Chanda Raśmi*s are marginal. Likewise, in *Yajuḥ* titled *Chanda Raśmi*s have *Bhuvaḥ* and *Sāma* titled *Chanda Raśmi*s have *Svaḥ* as the dominant and other *Daivī Chanda Raśmi*s are marginal.

All types of *Chanda Raśmi*s, which are available in the form of *Mantrā* in *Veda* and the ones which are not available too, are present in this cosmos. From these entire has been created. These all *Chanda Raśmi*s are classified in the above three categories.

7.3 Second type of Classification

Let us now understand another type of classification of *Chanda Raśmi*-

There are infinite and uncountable *Chanda Raśmi*s present in this cosmos, but they can be classified into seven broad categories according to their properties and functions. These 7 *Chanda* are- *Gāyatrī, Uṣṇik, Anuṣṭup, Bṛhatī, Paṁkti, Triṣṭup* and *Jagatī*. These 7 *Chanda*s again have the following eight

divisions as *Daivī*, *Asura*i, *Prājāpatyā*, *Yājuṣī*, *Sāmnī*, *Ārcī*, *Ārṣī* and *Brāhmī*. Let us understand these seven ones by one-

1. *Gāyatrī* - As soon as the *'Om' Chanda Raśmi*s begin stimulating the *Manas Tattva*, the first *Raśmi*s (vibrations) that are generated are termed as *Gāyatrī Chanda Raśmi*s. These *Raśmi*s possess three types of motions. Its velocity is highest amongst all other *Chanda*s. These dominate extensively during the first stage of the formation of the cosmos. These *Raśmi*s generate light. The *Piṁgala Chanda Sūtra*, has termed the light originating from *Gāyatrī Chanda Raśmi*s to be 'white'. These *Chanda Raśmi*s are like the mouth of all other *Chanda Raśmi*s. It means like the words spoken by one's mouth inspires others. Similarly, *Gāyatrī Raśmi*s also stimulate all other *Chanda Raśmi*s. These *Raśmi*s play a leading role in providing force to all.

2. *Uṣṇik* - These *Raśmi*s cover *Gāyatrī Raśmi*s from outside and enhance the mutual attraction between them and other *Chanda Raśmi*s and increase the synthesis among the various *Chanda Raśmi*s. These *Raśmi*s combine other *Raśmi*s just like the neck joins the head with the torso. Moreover, these *Raśmi*s assimilate minor *Raśmi*s released by other *Raśmi*s, which helps in the synthesis. These *Raśmi*s cover the *Prāṇa Raśmi*s same as hairs on the skin-like *Gāyatrī Raśmi*s. They increase the illuminance of the other *Raśmi*s and make them penetrating. Due to the effect of these *Raśmi*s, the *Gāyatrī Raśmi*s are highly energized, which increases the heat. The cosmos becomes colourful due to them, i.e. various colours emerge.

3. *Anuṣṭup* - These *Chanda Raśmi*s hold other *Raśmi*s favourably. It implies that all the *Chanda Raśmi*s work smoothly either in the presence of these or by combining with these *Raśmi*s.

For example, if a *Raśmi* plays a role in generating light, then the same *Raśmi* together with *Anuṣṭup Raśmi*, will quickly generate more light. These *Raśmi*s are like the *Yoni* of other *Chanda Raśmi*s; implies that all other *Chanda Raśmi*s are present within these *Chanda Raśmi*s. Additionally, various *Chanda Raśmi*s are generated from these *Anuṣṭup Chanda Raśmi*s only. Among them, the quantity of *'Om' Raśmi*s is relatively high. These *Raśmi*s are in continuous motion due to *Prāṇa Raśmi*s. These have penetrating power and produce reddish-brown colour.

4. *Bṛhatī* - These *Raśmi*s helps in the formation of surfaces of the particles or celestial bodies under formation, covering and compressing the material from all sides at the time of formation of other *Raśmi*s, various particles and celestial bodies. These *Raśmi*s pervade those particles and celestial bodies completely. These *Raśmi*s are abundant in space (*Ākāśa Tattva*). These are also abundant in the central region of stars. It keeps condensing the new particle formed from the fusion of particles by pervading in its periphery. *Prāṇa Raśmi*s act as the genital organs of these *Bṛhatī Raśmi*s. The fire with flames originates due to these *Bṛhatī Raśmi*s. These keep all other *Raśmi*s in limit. Their colour is black.

5. *Paṁkti* - These *Raśmi*s possess five types of movements and are continuously absorbed by different *Raśmi*s and particles. Due to this reason, these have exceptional capabilities of 'amalgamation'. These act as the marrow of the *Prāṇa Raśmi*s. Just like the marrow of the bones revitalizes the blood and increases the immunity of the body, similarly, the power of the *Prāṇa Raśmi*s increases in the presence of *Paṁkti Chanda Raśmi*s. The blue colour is generated from them.

6. *Triṣṭup* - These *Chanda Raśmi*s behave like 'Navel' of the entire *Chanda Raśmi* group and binds them together. These are abundant inside the stars, especially at the core. Due to them, highly penetrating electrical waves are generated and are enhanced. These *Raśmi*s provide high energy and force to other *Chanda Raśmi*s. These *Raśmi*s are like muscles, i.e. various *Prāṇa Raśmi*s get power by them. These *Raśmi*s hold other *Raśmi*s and particles in three ways, hence termed as *Triṣṭup*. These are capable of destroying the Dark Matter (*Asura Tattva*) or Dark Energy. These are abundant in space (*Ākāśa Tattva*). The red colour is generated from them.

7. *Jagatī* - These *Raśmi*s can travel the longest distance among all. The entire world presents within it; hence it is *Jagatī*. These *Raśmi*s bind various synthesizable particles and quanta and enable the process of their synthesis. The process of emission and absorption of energy and electron happens due to them. These *Raśmi*s act like the spine of the entire *Chanda Raśmi* group. It means that these provide a structural base to the *Prāṇa Raśmi*s, on which all *Chanda Raśmi*s are dependent. Light blonde colour is generated from them.

After the description about the features of the seven *Chanda Raśmi*s, let us

now understand their various divisions-

7.4 The eight divisions of *Chanda Raśmi*s

All seven *Chanda Raśmi*s can be further classified in the following eight types-

1. *Daivī* - These *Chanda Raśmi*s are the first to originate in this cosmos. *'Om'*, '*Bhūḥ*', '*Bhuvaḥ*', '*Svaḥ*' etc. root *Raśmi*s are *Daivī Chanda Raśmi*s only. Due to them, imperceptible and very minor illuminance and minor force are produced. These pervade everywhere. The number of *Akṣara* in *Daivī* form of aforementioned all seven *Chanda Raśmi*s is as follows- *Daivī Gāyatrī*-1, *Daivī Uṣṇik*-2, *Daivī Anuṣṭup*-3, *Daivī Bṛhatī*-4, *Daivī Paṁkti*-5, *Daivī Triṣṭup*-6 and *Daivī Jagatī*-7.

2. *Yājuṣī* - Due to their influence, subtle motion and combination (*Yajñana*) activity are generated in the subtle *Raśmi*s. At this point, the space (*Ākāśa Tattva*) begins to form. Commotion begins in the entire material.

3. *Prājāpatyā* - When these originate, the process of synthesis of various *Raśmi*s has enhanced, and the rate of production of new *Raśmi*s increases. These *Raśmi*s are called *Marut* because they are in short *Chanda* form only, which travel at a slow speed.

4. *Sāmnī* - These play role in the generation of various electromagnetic waves and so-called Mediator Particles. Due to their influence, light, heat and various forces are enriched.

5. *Āsurī* - *Asura tattva* (dark matter or dark energy) is produced in the influence of these *Raśmi*s or the *Raśmi*s themselves exist in dark form. There is a significantly less or negligible attraction among these *Raśmi*s, while repulsive or projectile forces dominate. There is the dominance of *Manas-Tattva* and *Apāna Prāṇa* in them.

6. *Ārcī* - Various non-illuminated materials, i.e. elementary particles and celestial bodies, are formed by their influence. For this reason, these *Raśmi*s increase the rate of compaction and penetration of various *Raśmi*s and quanta.

7. *Ārṣī* - Most of the *Chanda Raśmi*s originated from *Prāṇa* etc. *Raśmi*s are called *Ārṣī*. These are in abundance when the cosmic clouds and various celestial bodies are being formed.

8. *Brāhmī* - When these are generated, the force of various *Chanda Raśmi*s continuously extends.

This way, these are eight divisions of *Gāyatrī* etc. *Chanda*s. In this way, till now a total of 56 types of *Chanda Raśmi*s have been described. The number of *Akṣara*s in these *Chanda Raśmi*s is given in the below table:

Chanda	*Gāyatrī*	*Uṣṇik*	*Anuṣṭup*	*Bṛhatī*	*Paṁkti*	*Triṣṭup*	*Jagatī*
Ārṣī	24	28	32	36	40	44	48
Daivī	1	2	3	4	5	6	7
Āsurī	15	14	13	12	11	10	9
Prājāpatyā	8	12	16	20	24	28	32
Yājuṣī	6	7	8	9	10	11	12
Sāmnī	12	14	16	18	20	22	24
Ārcī	18	21	24	27	30	33	36
Brāhmī	36	42	48	54	60	66	72

In this table, *Chanda* having an equal number of *Akṣara* is due to the difference in the configuration of the *Akṣara*s. As you must have studied about isobars and isotopes. This subject can be understood only by the deep study of *Chanda Śāstra*.

7.5 Other sub-classification of *Chanda*

Let us now discuss some other classifications of *Chanda Raśmi*s. Due to the distinction in the *Akṣara*s (alphabets), the *Chanda Raśmi*s as mentioned above are classified as below-

1. *Sāmānya Chanda* - *Chanda Raśmi*s that have the number of *Akṣara*s equal to the as mentioned in the above table can be termed as *Sāmānya Chanda*. Their effect will be the same as that of the ordinary (*Sāmānya) Chanda*.

2. *Bhurik Chanda* - In these types of *Chanda Raśmi*s, there is one extra *Akṣara* as compared to *Sāmānya Chanda*. These have higher capabilities to hold and nurture as compared to other *Chanda Raśmi*s. These *Raśmi*s are like arms hence, enhancing the properties of holding, attraction, prohibition etc.

3. *Svarāṭ Chanda* - When a *Raśmi* has two extra *Akṣara*s compared to a *Sāmānya Raśmi*, then that *Chanda Raśmi* acquires the form of *Svarāṭ Raśmi*. These *Chanda Raśmi*s, when compared with others, are especially capable of generating light and electrical fields.

4. *Virāṭ Chanda* - When a *Raśmi* has two less *Akṣara*s compared to a *Sāmānya Raśmi*, then that *Chanda Raśmi* is called as *Virāṭ Raśmi*. All *Akṣara*s of this *Raśmi* has the capability to glow differently. This *Chanda Raśmi* is especially capable of synergizing with other *Chanda Raśmi*s and has a wide area of influence.

5. *Nicṛt Chanda* - These *Raśmi*s especially possess- penetrating and binding, both types of forces. When a *Raśmi* has one less *Akṣara* as compared to a *Sāmānya Raśmi*, then that *Chanda Raśmi* acquires the form of *Nicṛt Raśmi*, means that *Sāmānya Chanda Raśmi*'s effect becomes more penetrating.

In this way, thousands of *Chanda Raśmi*s exist in this cosmos. Their form keeps changing due to the number of *Akṣara*s and the configuration of *Akṣara*s in them.

7.6 How to identify the *Chanda* of *Raśmi*s?

To identify the *Chanda* of a *Raśmi*, count the number of *Svara* (vowel) in the *Mantrā*, as that number decides the *Chanda*. For example, the below mantra has 23 (in *Vaidic* Physics we count only *Svara* or vowels) *Akṣara*. As it has one less than the *Sāmānya* (24), it is *Nicṛt Chanda*. Hence, its *Chanda* is *Ārṣī Nicṛt Gāyatrī*.

Figure 7.1

7.7 Transformation of *Raśmi*s

In this cosmos, various particles and waves of mild and high energies combine and even before them, various *Prāṇa* and other *Chanda* etc. *Raśmi*s combine and make massive stars having intense heat and other celestial bodies. In the process of creation of the celestial bodies, when the various high energy waves begin losing their energy, they transform into waves of low energy. These waves and various particles create matter with properties and features similar to them. In specific cases, these particles and waves get transformed into other forms of particles and waves. Likewise, the *Chanda Raśmi*s in the cosmos, too, is transformed from one form to another. *Triṣṭup Chanda Raśmi* is the most powerful, and it transforms into *Gāyatrī*, *Jagatī*, etc. when it loses energy. On the other hand, *Gāyatrī Chanda Raśmi*s too give rise to *Triṣṭup* etc. *Chanda Raśmi*s.

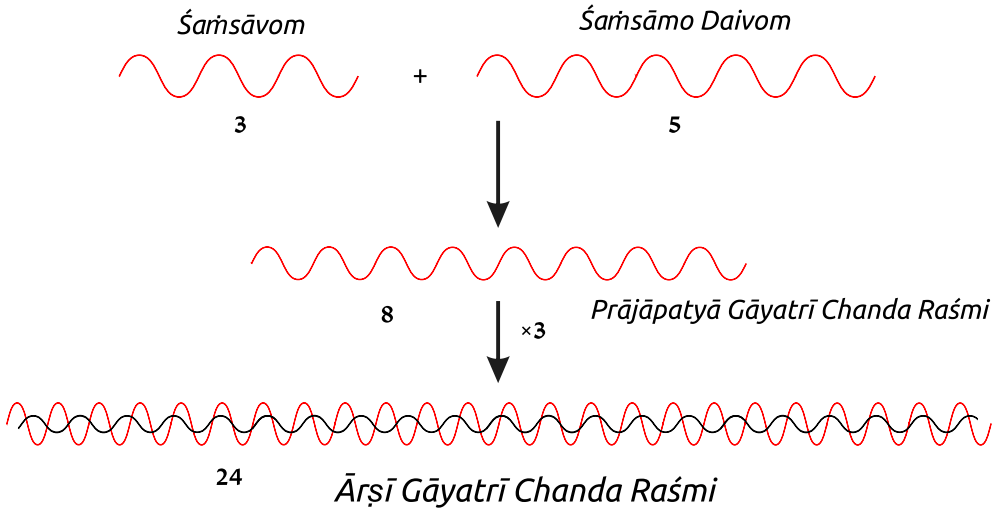


Figure 7.2 Formation of bigger *Chanda Raśmi* from smaller *Chanda Raśmi*-s

When one *Chanda Raśmi* joins with another *Chanda Raśmi*, it altogether forms a third new *Raśmi*. For example, in the process of formation of *Gāyatrī Chanda Raśmi*, *Śoṁsāvom Chanda Raśmi* having 3 *Akṣara*s combines with *Śaṁsāmo Daivom* having 5 *Akṣara*s, to make *Prājāpatyā Gāyatrī Chanda Raśmi* having 8 *Akṣara*s. The *Prājāpatyā Gāyatrī Chanda Raśmi* then replicates, three times, to generate *Ārṣī Gāyatrī Chanda Raśmi*.

Various uncharged particles combine with subtle and compressed *Marut*

*Raśmi*s to transform into electrically charged particles. These *Marut Raśmi*s are behind the transformation process of such particles, which have been identified by modern sciences and are transformed into various forms depending on the circumstances. Today's scientists call these compressed *Marut Raśmi*s as electrons, quarks etc.

Every non-living matter of this cosmos can be transformed from one form to another, which happens continuously. The transformation of various subtle *Raśmi*s and radiations into each other is not a normal process but an extraordinary event, which happens once in a while and at specific places only. The usual process is that various particles and waves maintain their original form.

Till here, we have discussed the formation and properties of various materials, from the formation of *Kāla* from *Prakṛti* by the supreme conscious entity to *Mahat-Tattva* and various *Prāṇa* and *Chanda* etc. *Raśmi*s. Now we will learn about the formation and features of subsequent materials. Modern science is completely blank about the science behind the formation and the properties of *Kāla* (can say time) and *Ākāśa* (space). The process of creation and structure of elementary particles and quanta is still unknown to modern science. Modern science is unable to envisage the topics of cosmology that we have dealt till now. Due to the absence of knowledge, there is no growth and advancement in theoretical physics, and it has come to a halt. This is even felt and understood by the scientists too.

You learnt in this Chapter

- ✓ *'Om'*, *Bhūḥ*, *Bhuvaḥ*, *Svaḥ* etc. *Chanda Raśmi*s and *Prāthamika Prāṇa Raśmi*s, all are subtle vibrations in the *Manas Tattva*.
- ✓ *Chanda Raśmi*s are of 3 types - *Ṛk*, *Yajuḥ* and *Sāma*. In their formation, *Manas-Tattva* and *'Om' Raśmi*s along with *'Om'*, *Bhūḥ*, *Bhuvaḥ* and *Svaḥ* respectively play an important role.
- ✓ All *Chanda Raśmi*s originate in such form of vibrations that they immediately bind themselves with various *Prāṇa Raśmi*s.

- ✓ In this cosmos, there are innumerable *Chanda Raśmi*s. However, based on their properties, they can be categorized into seven broad categories - (*Gāyatrī*, *Uṣṇik*, *Anuṣṭup*, *Bṛhatī*, *Paṁkti*, *Triṣṭup*, and *Jagatī*).
- ✓ These seven categories of *Chanda Raśmi*s are further subdivided into eight types *Daivī*, *Asura*i, *Prājāpatyā*, *Yājuṣī*, *Sāmnī*, *Ārcī*, *Ārṣī* and *Brāhmī*.
- ✓ The first *Raśmi*s (vibrations) that are generated in *Manas Tattva* are *Gāyatrī Chanda Raśmi*s. These provide force to other *Chanda Raśmi*s.
- ✓ These eight types of *Chanda Raśmi*s are further classified into five groups (*Sāmānya*, *Bhurik*, *Svarāṭ*, *Virāṭ*, and *Nicṛt*) due to variation in *Akṣara*s.
- ✓ Cosmos has hundreds of *Chanda Raśmi*s. Due to the variation in the number of *Akṣara*s and the configuration of *Akṣara*s in them, these *Chanda Raśmi*s transform continuously.
- ✓ The number of *Akṣara*s is required to identify the *Chanda* of a *Raśmi*, as the number determines the *Chanda*.
- ✓ Due to 23 *Akṣara* in *Gāyatrī Mantra* (one less than *Sāmānya)*, it is *Nicṛt Chanda*. Hence, its *Chanda* is *Ārṣī Nicṛt Gāyatrī*.
- ✓ Various particles and radiations keep transform into other particles and radiations respectively. E.g. *Triṣṭup Chanda Raśmi*s are most powerful, but when they lose energy, they transform into *Gāyatrī*, *Jagatī* etc. *Chanda Raśmi*s.

EXERCISES

1. Describe the properties of the three *Chanda Raśmi*s - *Ṛk*, *Yajuḥ* and *Sāma*.
2. What are the main categories of *Chanda Raśmi*s? Which *Chanda Raśmi* originates first, and which *Chanda Raśmi*s generates the most force?
3. Which *Raśmi* plays a vital role in compaction of material and forming the periphery of particles and celestial bodies?
4. What is the basis of the second-order classification of the *Chanda Raśmi*s?
5. What are the eight types of *Chanda Raśmi*s? What are the properties of *Āsurī Chanda Raśmi*s?

6. Which *Raśmi*s is formed during the formation of *Ākāśa* (space)?
7. What are the different sub-categories of *Chanda*s, and which type of *Chanda Raśmi* produces penetrating effect?
8. Explain the process of transformation of *Raśmi*s with example.

❋ ❋ ❋ ❋ ❋

CHAPTER 8

Ākāśa

The *Ākāśa* (space) originates during the formation of the *Raśmi*s as described in the previous chapter. The word *Ākāśa* is used in two ways. The first is the A*vakāśa* (emptiness) form of *Ākāśa* or the non-existence. On the other side, *Veda* has indicated a second *Ākāśa* titled as '*Apara Vyoma*', which has been discussed by *Maharṣi Dayānanda Sarasvatī* in his book *Ṛgvedādibhāṣyabhūmikā*. This *Ākāśa* is the name of a specific material, which we will discuss in this chapter.

8.1 The origin of *Ākāśa*

The five *Mahābhūta* originate from the *Manas-Tattva*. This cosmos has originated from different combinations of various *Prāṇa* and *Chanda Raśmi*s. All the five *Mahābhūta*, i.e. *Ākāśa* (space), Earth, Water, Fire and Air are created from them only. Amongst the five, *Ākāśa* originates at first.

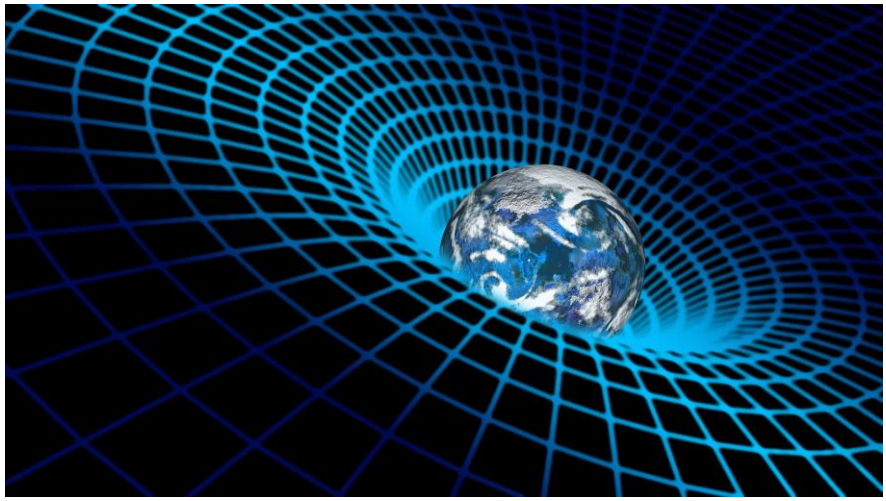


Figure 8.1

Modern physicists are confused and doubtful about this *Ākāśa Tattva* (space). They consider *Ākāśa* as three dimensional (3D). However, what is the features or properties of *Ākāśa*? Is the vacant space *Ākāśa*? Or is *Ākāśa* a material? They do not have a clear answer to these questions. They do accept the warping or distortion of *Ākāśa* due to the effect of gravitational or electro-magnetic forces but avoid calling it as the material.

When *Ākāśa* is not material, then what will be the deformation or curvature due to force? It is a matter of surprise that modern developed science considers and knows the gravitational force as the curvature of *Ākāśa* (space), but what is *Ākāśa*, is not known to it. On the other hand, *Vaidic* Science provides extensive evidence about *Ākāśa Tattva*. According to *Vaidi*c Science, the nature of *Ākāśa Tattva*, in a nutshell, is as follows-

8.2 Features of *Ākāśa*

Ākāśa is a material. All types of particles, quanta originate and reside in *Ākāśa*. *Ākāśa* exists in the form of *Prāṇa Raśmi*s. When *Prāṇa*, *Apāna* and *Udāna Raśmi*s iterate a thousand times, then with a combination of various *Prāṇa*s, other *Chanda Raśmi*s are generated in the form of *Ākāśa Tattva*.

Various *Chanda*s and *Prāṇa Tattva* are capable of warping or distorting the *Ākāśa Tattva*. *Ākāśa* itself is a *Raśmi* which is very subtle. *Ākāśa Tattva* is capable of holding various particles and quanta. It has an abundance of *Bṛhatī Chanda Raśmi*. It is so subtle that it appears to be empty. It has abundant *Raśmi*s and pervades in every material. It behaves like a hole or hollowness. *'Om'*, *Triṣṭup*, *Marut*, *Sūtrātmā Vāyu* and *Chanda Raśmi*s are in excess in it. It provides a way to various larger *Chanda Raśmi*s, elementary particles and radiations etc. According to *Maharṣi Kaṇāda*, 'where various substances enter and exit, it is called *Ākāśa*'.

The *Raśmi*s present in *Ākāśa* rotates in an extreme dormant state. Their mutual cohesive force is negligible. Hence, various particles and radiations move freely and unhindered in *Ākāśa Tattva*. During the process of creation of cosmos, apart from *'Om'*, *Bhūḥ*, *Bhuvaḥ* and *Svaḥ*, when other *Daivī Chanda Raśmi*s and other *Prāṇa* including *Sūtrātmā Vāyu*, *Apāna* and other *Prāṇa Raśmi*s are formed, then at that time due to impact of some *Raśmi*s, one subtle and homogeneous material is formed. Before the formation of this material, the *Prāṇa*, *Apāna* and *Udāna* have already iterated a thousand times. *Daivī Anuṣṭup*

and *Yājuṣī* (*Bṛhatī*, *Paṁkti* and *Triṣṭup*) also have been formed by then. These four *Chanda Raśmi*s are synthesized together in such a way that they resemble the same effect as *Daivī Anuṣṭup Chanda Raśmi*s. Various *Prāṇa*, *Apāna* etc. *Raśmi*s combine with various *Daivī Chanda Raśmi*s to produce *Daivī Anuṣṭup Chanda Raśmi*s. These *Raśmi*s vibrate at their own place and do not travel in *Manas Tattva*.

The components of *Ākāśa* i.e. *Prāṇa* and *Marut Raśmi*s exist in the cluster in the dormant stage. This cluster exhibits rotational motion, which means they do not have linear motion but rotate at a plodding speed. These *Raśmi*s are known as *Ākāśa Raśmi*s. In this state, these *Raśmi*s are so lax that various larger *Chanda Raśmi*s, particles and quanta can readily travel through them. While moving, when these particles, photons and *Raśmi*s travel within the *Ākāśa Tattva*, then they easily slip through the aforementioned rotating and lax *Ākāśa Raśmi*s (*Prāṇa* and *Marut*).

Even in this state, these dormant *Raśmi*s are continuously controlled by *Sūtrātmā Vāyu*. Due to this reason, when *Ākāśa Tattva* is distorted or gets warped by any force, it is due to the effect on the rotation of the *Ākāśa Raśmi*s by *Sūtrātmā Vāyu Raśmi*s. This *Ākāśa Tattva* is subtle, imperceptible, illuminated, has negligible mass and possesses electrical force.

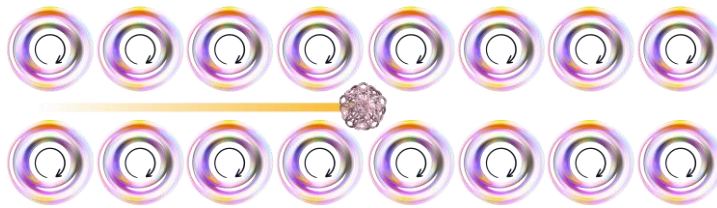


Figure 8.2 Motion of photon in space

This way, *Ākāśa* is like a web of various units. These units are mutually tied by *Sūtrātmā Vāyu Raśmi*s. These units continuously rotate on their axis. Their mutual bond is very loose. Hence, any particle or any wave can easily pass through it. *Ākāśa* acts as a road for these particles and waves to travel. Some *Raśmi*s of *Ākāśa* provides the base to particle or wave while some others provide friction to them like while walking on the road, the road provides friction. Just like the reactionary force to the frictional force pushes the wheel of the car forward, similarly, while moving in *Ākāśa*, some *Raśmi*s provide reactionary force to the particles or waves to move them forward (fig. 8.3). This way, a

particle or wave freely moves into *Ākāśa*. During the movement of the particle or wave, few *Raśmi*s of the *Ākāśa* distorts some units to make way for those particles or waves. *Ākāśa Tattva* is made of *Prāthamika Prāṇa Raśmi*s and subtle *Chanda Raśmi*s, and this is the reason for warping or distortion of *Ākāśa* during various types of attractive and repulsive forces.

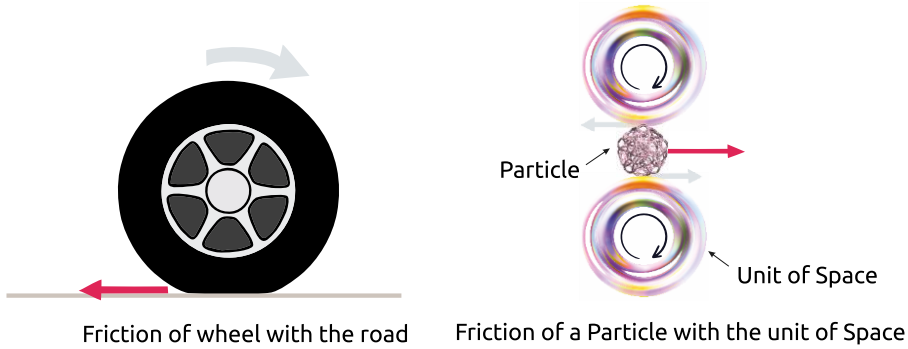


Figure 8.3

Ākāśa Tattva is also a mixture of subtle *Prāṇa* and *Marut Raśmi*s too. In this *Triṣṭup* and *Bṛhatī Chanda Raśmi*s are in abundance, while in various particles, *Gāyatrī Chanda Raśmi*s are in abundance. The *Raśmi*s of *Ākāśa Tattva* touch various particles during their combination and separation at the micro-level, but their self-attractive and other forces are negligible.

8.3 Features of *Diśā* (direction)

You very well know about the ten directions viz. East, West, North, South etc., but can you think the direction is also a material like *Ākāśa*. *Dik-Tattva* (*Diśā*) is included in *Ākāśa*. *Dik-Tattva* is that part of *Ākāśa Tattva* that surrounds or envelops a particle, celestial body etc. and controls its activities like rotation, combination, etc.

Just like *Ākāśa Mahābhūta*, *Dik-Tattva* too is like *Raśmi*. *Kāla Tattva* is more subtle than these. The typical relationship among the three is that all the three stimulate and control the *Mahābhūta* but do not become part of any material. Even today, various materials are being formed, and for this, various activities are going on in the entire cosmos. In all these activities, these three materials do not take part directly but indirectly influence them. Various *Vāk* or the *Chanda Raśmi*s acquire the form of *Dik-Tattva*. The nature of *Dik-Tattva*, in

brief, is as follows:

1. *Anuṣṭup Chanda Raśmi*s dominate in *Dik-Tattva*.
2. There are ten directions - 4 *Diśā*, 4 *Avāntara Diśā* (directions between the *Diśā*), and up (*Ūrdhva*) and down (*Dhruva*). All ten directions have different roles.
3. *Chanda* or *Prāṇa* form of *Dik-Tattva*, covers various particles and celestial bodies at the periphery.
4. This substance provides rotational motion to celestial bodies.
5. In this *Tattva*, *Prāṇa*, *Apāna*, *Vyāna*, *Udāna*, *Samāna*, *Sūtrātmā Vāyu* and *Dhanañjaya Raśmi*s are present. Of these, *Sūtrātmā Vāyu* leads in creating the periphery.
6. The *Chanda Raśmi*s present on the outside of any material is a form of *Dik-Tattva*.
7. *Dik* form of *Raśmi*s absorb the *Raśmi*s emitted from various particles or celestial bodies and helps them bind together.

Activity

Try to explain gravitational waves and bending of light wave around the massive objects by *Vaidic Raśmi* Theory.

You learnt in this Chapter

- ✓ *Ākāśa* is a real material, which is formed from the interactions of subtle *Vaidic Chanda Raśmi*s.
- ✓ When *Prāṇa*, *Apāna* and *Udāna Raśmi*s iterate for 1000 times then by the combination of various *Prāṇa*s, the *Ākāśa Tattva* originates in the form of

various *Chanda Raśmi*s.

- ✓ *Ākāśa Tattva* is so subtle that absence or emptiness appears to be its feature.
- ✓ The *Prāṇa Raśmi*s present in *Ākāśa* are in a dormant stage and move in a circular motion. Therefore, their mutual bond is significantly less.
- ✓ The warping or distortion of *Ākāśa Tattva* is due to the influence of *Sūtrātmā Vāyu* on the rotational motion of the *Ākāśa Raśmi*s.
- ✓ This *Tattva* is subtle, has an imperceptible glow and negligible mass. It has an abundance of *'Om'*, *Triṣṭup*, *Marut*, *Sūtrātmā Vāyu* and *Chanda* etc. *Raśmi*s.
- ✓ *Ākāśa* is like of web of various units. These units are mutually tied together with *Sūtrātmā Vāyu*. These units continuously rotate on their axis.
- ✓ The mutual bond of these units is highly lax. Due to this, any particle or wave can easily pass through it. These units can interact with other *Chanda Raśmi*s to compact, warp, distort, bend or expand.
- ✓ *Ākāśa* acts as a road for particles or waves to travel.
- ✓ *Dik-Tattva* is that part of *Ākāśa Tattva* which surrounds a particle or celestial body from all sides and controls the activities like rotational motion, synthesis etc.
- ✓ *Prāṇa*, *Apāna*, *Vyāna*, *Udāna*, *Samāna*, *Sūtrātmā Vāyu* and *Dhanañjaya Raśmi*s are present in *Dik-Tattva*. Of these, *Sūtrātmā Vāyu* leads to make its periphery.
- ✓ *Dik* form of *Raśmi*s absorb the *Raśmi*s emitted from various particles or celestial bodies and helps them bind together.

EXERCISES

1. How many types of *Ākāśa* are there and explain the concept of *Ākāśa* as per modern science?
2. In *Vaidic* Physics, the material named as *Ākāśa* is made of which type of *Raśmi*s?

3. How do subtle particles, waves and all other substances travel unhindered in *Ākāśa* substance?
4. Explain the basics of the theory of general relativity by modern physics and *Vaidic* physics.
5. What is *Diśā*? Describe its properties.

❋ ❋ ❋ ❋ ❋

CHAPTER 9

Various types of Forces

We know that force is an essential property for the functioning of the cosmos. Force is that fundamental property of the matter by which the entire cosmos is controlled. Entire Cosmos is created by this and by this will be destroyed at an appropriate time. Every substance in this cosmos, from smaller than the smallest to the larger than the largest, is controlled by a property named 'force'.

9.1 Features of force

While writing about the force, *Maharṣi Yāska* writes in his book *Nirukta*-

'Balaṁ kasmāt balaṁ bharaṁ bhavati bibhartteḥ'

Means: the property that holds and nurtures any material is called as '*Bala*' force. We all know that it is the force that holds together various celestial bodies to the smallest particles. Now the question is, how does the material 'nurture' by force? Here the word 'nurture' implies that the existence of every particle is also dependent on the force. Let us understand it this way: the bonding of numerous subtle particles forms any bulky substance, and its existence depends on that bond. If that bond between the subtle components ceases to exist suddenly, it will lose its existence and disintegrate into those components.

Now, is the existence of the subtle particles too dependent on the force? If yes, then how? Let us understand it this way that every particle is made of various *Chanda* and *Prāṇa Raśmi*s, these *Raśmi*s are from *Manas Tattva*, *Mahat-Tattva* and ultimately from *Prakṛti* (fundamental state of matter). Due to this reason, all elementary particles and quanta exist due to the forces present between the *Raśmi*s. Therefore, their life is also dependent on the force. It must be noted that in modern physics, there is no clear definition of force, while in *Vaidic* Physics, one can learn about the properties of '*Bala*' (force) when he/she learns about the

term '*Bala*'.

9.2 Types of forces

Modern science acknowledges the existence of four types of forces. For all these four forces, it considers four mediator particles that are responsible for them. These are

1. Electromagnetic force - Photon
2. Gravitational force - Graviton
3. Strong nuclear force - Gluon
4. Weak nuclear force - W, Z Bosons

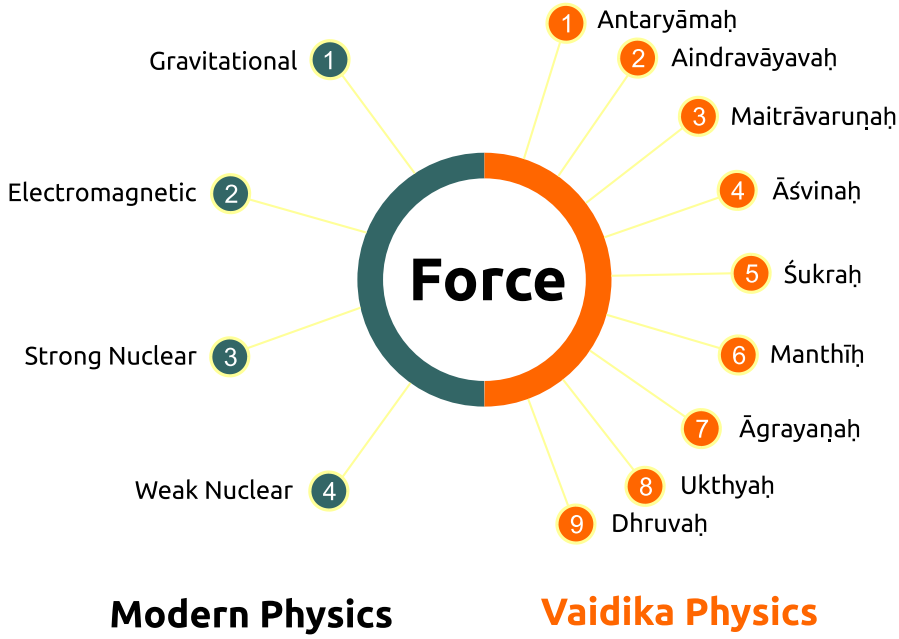


Figure 9.1 Types of forces

The electromagnetic force acts between the charged particles, due to which the electrically charged particles attract or repel each other. This electromagnetic force pervades the entire cosmos and plays a vital role in creating, settling and managing the entire cosmos. The cosmos will finish in a moment in its absence. Due to this force, various molecules and other substances etc. remain in equilibrium and motion.

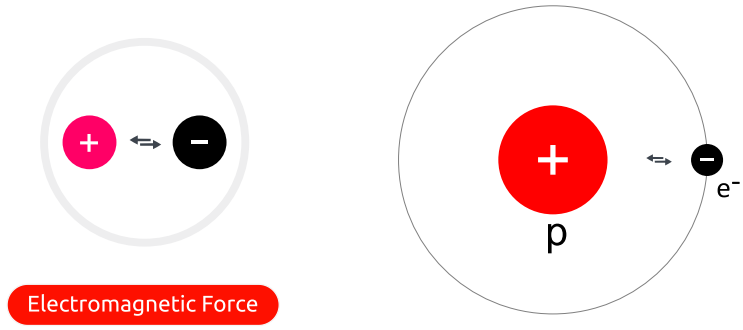


Figure 9.2

The second is the gravitational force which works between two objects having mass. Due to this force, various celestial bodies are tied with each other. This plays an essential role in the existence of every living being, including us.

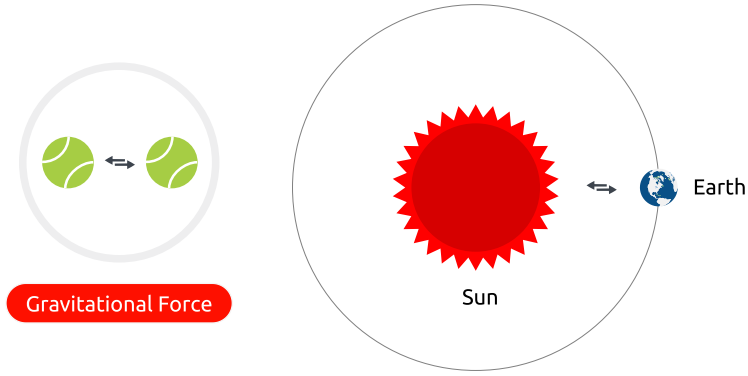


Figure 9.3

The rest of the two forces operate inside the nucleus, due to which the nucleus exists.

However, modern science is still unable to understand the working mechanism of these forces. How are these mediator particles formed? Which force is responsible for their exchanges? These all are still unknown to modern science. On the other hand, *Vaidic* Science acknowledges the existence of nine types of forces. These are

1. *Antaryāmaḥ* - This force is in the form of subtle *Raśmi*s and is continuously transmitted in the mid-region of various particles and waves. It exists in the form

of subtle *Raśmi*s in the elementary particles and quanta and makes them active and stimulates them to retain their state.

2. *Aindravāyavaḥ* - This force becomes the cause of creation, activity and intensity of energy and motion and functions between two charged particles. Barring the gravitational force among the four forces of modern science, all come under this force.

3. *Maitrāvaruṇaḥ* - This force is responsible for combining the joint *Prāṇa*s between the pairs of *Prāṇa* - *Apāna* and *Prāṇa* - *Udāna*. This force is present in a very subtle form in various other forces. It is also the cause of the force of high-speed entities.

Maitrāvaruṇaḥ force works between *Prāṇa* and *Apāna*, *Prāṇa* and *Udāna*. Due to this force, the cosmos is formed and operated, and it pervades the entire cosmos. This force originates from the synthesis of very very subtle *Raśmi*s of *Mana* and *Sūtrātmā Vāyu*. Due to these *Raśmi*s, *Vyāna Raśmi*s originate in place of Mediator Particles, which continuously transmit in *Prāṇa* and *Apāna* and *Prāṇa* and *Udāna* to bind them mutually. This force continuously operates from the formation of the cosmos until its dissolution.

4. *Āśvinaḥ* -The meaning of *Āśvinaḥ* is pervasive or extensive. This force exists as an active force between various particles and waves and in the form of a subtle repulsive force at a very close level between various minute particles.

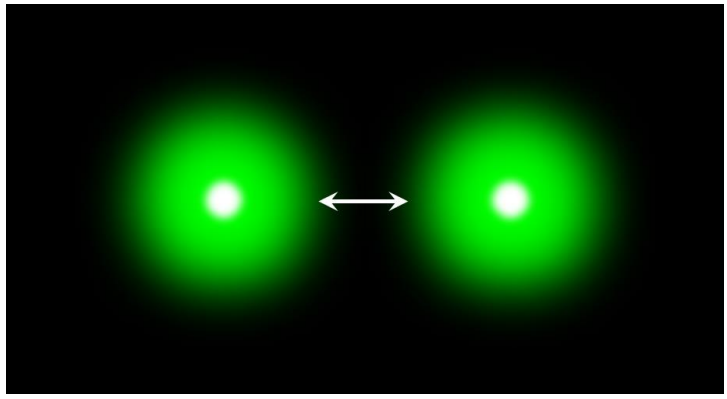


Figure 9.4 Repulsive force between two particles

Due to this reason, there is a necessary limited space between subtle particles. Hence, no two subtle particles or large objects can ever touch each other completely.

Additionally, the gravitational force is also called *Āśvina* force. This cosmos is stable due to this *Āśvina* force, which represents two extensive attractive and repulsive forces.

5. *Śukraḥ* - The *Raśmi*s of this force have high penetration capabilities, which means it is present in very high energy materials, which disintegrates various materials to purify them. For example, it exists in the core of the Sun.

6. *Manthīḥ* - This force is generated before the *Śukraḥ* force as mentioned earlier and goes deep into subtle levels of objects and stirs them.

7. *Āgrayaṇaḥ* - This is the most extensive force in the cosmos. It plays a role in the absorption and emission of energy. For example, electrons can absorb or emit energy due to this force.

8. *Ukthyaḥ* - This force provides a compact form to each *Chanda Raśmi* (which is itself a form of force), i.e. gives them a proper structure of *Raśmi*. This is a very subtle force.

9. *Dhruvaḥ* - The *Raśmi*s of this force try to bind the nearby force *Raśmi*s by not going far. They operate at a plodding speed and in a limited region.

9.3 More about force

Whatever particles, waves etc. that exists in this cosmos, whatever mutual activities they do, these nine forces play an essential role behind them. These forces originate at the beginning of the cosmos. These forces control all subtle particles, provide a path and pave the way for the formation of gross particles by combining and separating them.

These nine types of forces are important and contiguous parts of the process of combination and separation. Force *Raśmi*s, other particles and waves are primarily a function of the same material. When the formation of the cosmos begins, the forces are the first ones to originate. After that, various activities, motions etc., originate from them. Later, stopping and controlling various subtle

particles, providing motion to the stationary ones and stagnating a moving object is possible only by different forces at various levels.

In this cosmos, the force that operates between two objects is basically the force of the *Prāṇa* only. Due to various types of *Prāṇa* and the configurations within, the differences in their alignment etc., are also the cause of different types of forces. The force that operates between *Dhanañjaya* and *Sūtrātmā Vāyu Raśmi*s and various field particles is produced by the combination of *Gāyatrī Chanda Raśmi* and *Prāṇa Raśmi*.

The force acting between *Prāṇa* and *Apāna* or *Prāṇa* and *Udāna* is generated by the synthesis of *Mana* and *Sūtrātmā Vāyu* or *Daivī Triṣṭup* and *Daivī Uṣṇik Chanda Raśmi*s. The force acting between quanta and electrons are generated by the combination of *Sūtrātmā Vāyu* covering *Triṣṭup Chanda Raśmi*s and *Paṁkti*, *Bṛhatī Chanda Raśmi*s. Gravitational force, which acts between two non-luminous bodies, two luminous and between a luminous and a non-luminous body, also comes under *Āśvina*. The force acting between electrons and quanta can also be considered under gravitational force as well as electrical force. This way, it can be considered in both categories.

9.4 Unified force

In this cosmos, every type of energy and matter are formed from various *Prāṇa* and *Chanda Raśmi*s. *Manas Tattva* formed these *Prāṇa* and *Chanda Raśmi*s. In reality, the combination of *Mana* and *Vāk Tattva* is the active *Manas Tattva*. This active *Manas Tattva* only is the material cause (*Upādāna Kāraṇa*) and stimulant of all subtlest particle and radiations and even subtler *Prāṇa Raśmi*s etc. During absolute dissolution (*Pralaya*), the entire mass, energy and *Ākāśa* (space) gets dissolved into active *Manas Tattva* and finally get absorbed into *Prakṛti*, which is the ultimate ingredient.

The *Manas Tattva* is homogeneously distributed in this cosmos and is not denser or rarer at any places except within *Raśmi*s. It is the *Vāk Tattva* that gets rarer or denser, that is why the combination of this *Vāk Tattva* with *Manas Tattva* is definitely variable, becomes rarer and denser. For this reason, active *Manas Tattva* produces various forms, forces and actions etc., at different places by being rarer-denser. If that had not been the case, the formation of the cosmos would not have begun. The force of this active *Manas Tattva* is the subtlest. All other forces originate from it successively. It is always present in a very subtle form inside all the forces, and they all are stimulated and controlled by it.

The force of the supreme conscious entity also works continuously, behind this fundamental force too, which vibrates the *Manas Tattva* regularly and produces *Vāk Tattva*. It produces this fundamental force by producing active *Manas Tattva* from *Manas Tattva* containing *Vāk Tattva*. The supreme conscious entity produces the forces of *Manas Tattva* and *Vāk Tattva* using the *Kāla Tattva* as mentioned earlier. Modern science is speculating a unified force, but in reality, the above-mentioned force is a unified force, and no physical techniques can know this. In the following two chapters, we will learn more about gravitational and electromagnetic forces in detail.

You learnt in this Chapter

- ✓ Every substance of this cosmos, from the subtle to subtle and the vast to vast, all are controlled by an attribute called 'force'.
- ✓ The attribute that holds and nurtures a material is called force.
- ✓ If the acting force between the subunits of material suddenly ceases to exist, it will lose its existence and disintegrate into components.
- ✓ Modern science acknowledges the existence of four forces (gravitational, electromagnetic, weak nuclear forces and strong nuclear force)
- ✓ The electromagnetic force acts between the charged particles, which causes electrically charged particles to attract and repel each other.
- ✓ Gravitational force acts between two substances having mass. Due to this force, all celestial bodies are tied with each other.
- ✓ *Vaidic* Science acknowledges the existence of nine types of forces (*Antaryāmaḥ*, *Aindravāyavaḥ*, *Maitrāvaruṇaḥ*, *Āśvinaḥ*, *Śukraḥ*, *Manthīḥ*, *Āgrayaṇaḥ*, *Ukthyaḥ*, *Dhruvaḥ*)
- ✓ Force *Raśmi*s, other particles and waves are fundamentally a function of the same material.
- ✓ At the time of origin of the cosmos, the force gets generated first.
- ✓ Due to various types of *Prāṇa*s and the configurations within and the differences in their alignment etc., it causes different types of forces.

- ✓ During absolute dissolution (*Pralaya*), the entire mass, energy and *Ākāśa* (space) gets dissolved into active *Manas Tattva* and finally get absorbed into *Prakṛti*, which is the ultimate ingredient.
- ✓ The force of active *Manas Tattva* is the subtlest in this cosmos. All other forces originate from it successively.

EXERCISES

1. What is force? Explain.
2. How many types of forces are there according to modern science, and what are their names?
3. How many types of forces are there in *Vaidic* Physics? Explain each with an example.
4. What is the basis of the classification of forces in *Vaidic* Physics?
5. In *Vaidic* Physics which force can be said as a fundamental force and why?
6. Under which categories of forces of *Vaidic* Physics can the four fundamental forces of modern science be classified?

Activity

Try to imagine such a force, which does not come under the definition of force described in *Vaidic* Physics.

CHAPTER 10

Gravitational Force

10.1 Introduction

We see in our daily life that any object when falls, gets attracted towards the earth, the reason is the earth's gravitational force. We have been taught that Newton gave the law of gravitation to the world and is portrayed in such a way that no one knew about gravitation before him. But even thousands of years before Newton, *Maharṣi Kaṇāda* had written in his *Vaiśeṣika Darśana*-

saṁyogābhāve gurutvātpatanam (5.1.7)

Means: in the absence of contact (*saṁyoga*), the object falls due to gravitational force. For example, if we hold an apple, it will not fall on earth until the contact between the hand and the apple remains, and as soon as we leave it, it begins to fall. This is called the fall due to gravitation in the absence of any contact. Again, he says-

saṁskārābhāve gurutvāt patanam (5.1.18)

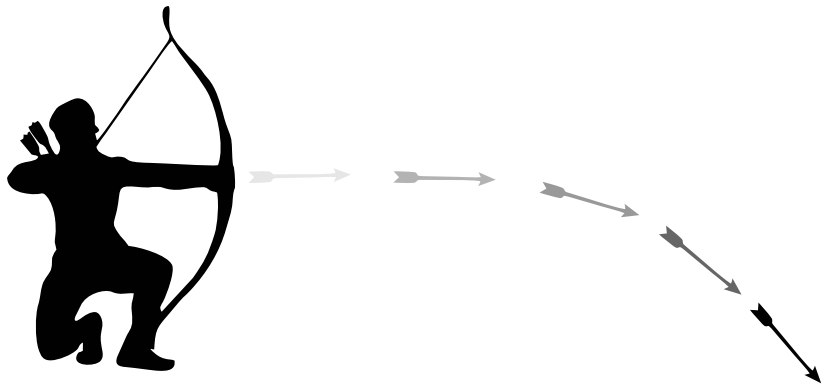


Figure 10.1 Object falling in the absence of *saṁskāra*

This means in the absence of inherent property (*saṁskāra*), the object will fall due to gravitational force. For example, as soon as the kinetic energy of the arrow finishes, it falls.

Here the speed of the object is its inherent property (*saṁskāra*). Likewise, a flying bird does not fall due to gravitation force, but if it is killed or stops flying itself, it will immediately fall to the ground due to gravitation.

10.2 The universal law of gravitation

According to Newton, 'in this cosmos, every object attracts another object with a force that is directly proportional to the product of the object's mass and inversely proportional to the square of the distance between them'.

[*Mathematical Principles of Natural Philosophy, 1687]*

In mathematical terms, this law of Newton is expressed as follows-

$$F = \frac{Gm_1m_2}{r^2}$$

Here, m_1 and m_2 are the masses of the two objects, and r is the distance between them. F is the force applied between them. G $(= 6.673 \times 10^{-11}\ Nm^2Kg^{-2})$ is a constant, which is the gravitational constant. This formula has been obtained based on logic and observation only.

Here is a question: Why is the gravitational force directly proportional to the mass and inversely proportional to the square of the distance? i.e. why do two objects of higher mass or lesser distances will have greater attractive force? The other question is, what is the working mechanism of attraction between the objects? How does the mass generate gravitational force? Due to the limitations of the present technique, modern science is silent on these questions. Let us try to solve these unanswered questions through *Vaidic* Science.

As per *Vaidic* Science, we know that any object comprises various types of *Chanda Raśmi*s (vibrations). Hence, some *Raśmi*s, especially *Bṛhatī* and *Paṁkti Chanda Raśmi*s are emitted and absorbed continuously from these objects or particles fig 10.2.

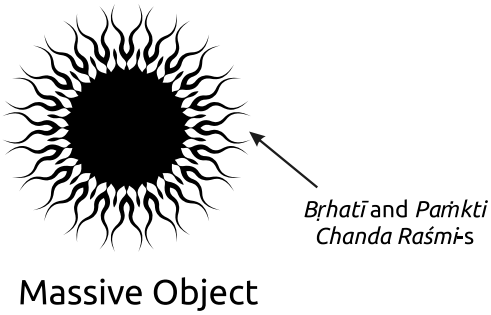


Figure 10.2

When such two objects come closer to each other, there is the formation of a particle due to the combination of the the *Paṁkti* and *Bṛhatī* emitted from them, which we can call 'graviton' in the language of modern science. The origin of graviton happens by a combination of *Sūtrātmā Vāyu* with *Bṛhatī* and *Paṁkti* by *Māsa* and *Ṛtu Raśmi*s having *'Om' Raśmi*.

These gravitons absorb the free-flowing *Bṛhatī*, and *Paṁkti Chanda Raśmi*s or *Raśmi*s emitted from mutually close objects, hence keeps on flowing freely everywhere. This process is the reason for the origin of gravitational force.

Figure 10.3 Origin of Graviton between massive objects

The higher is the mass of an object, the more *Bṛhatī* and *Paṁkti Chanda Raśmi*s will be emitted. Due to this, it will have a higher gravitational force.

As per inverse-square law, the number of *Raśmi*s emitted from mass '*m'* are inversely proportional to the square of the distance. Since the *Raśmi*s from mass *m* will emit equally in all directions, the strength of *Raśmi*s at a distance '*2r'* will be 1/4 of the strength of *Raśmi*s at a distance '*r*' from mass *'m'*.

Let us understand it with the help of a diagram-

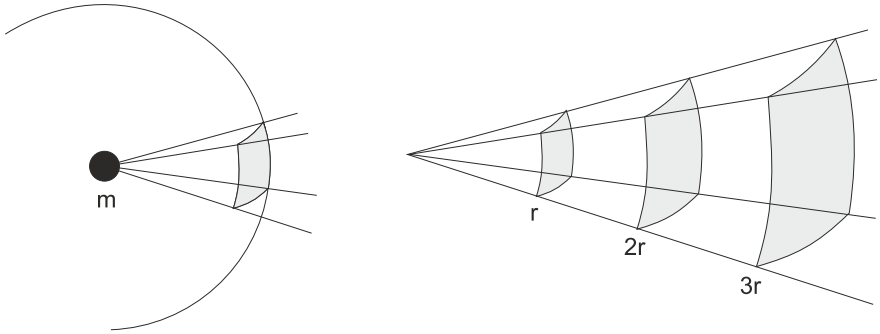


Figure 10.4 Weakening of *Raśmi*-s of Gravitation force with distance

We know that gravitational force is the weakest force among all the four forces known today. However, why is it so? Let us understand this too.

As we have mentioned earlier that gravitons are freely flowing everywhere, hence there is a leakage of the gravitational energy; again, the *Bṛhatī* and *Paṁkti Chanda Raśmi*s, emitted from both objects collide with each other, and hence, there is repulsion among them too. The natural mutual attraction between the *Bṛhatī* and *Paṁkti Chanda Raśmi* is relatively weak too. Due to these reasons, the gravitational force is weakest among all the forces but is extensive. Another reason for weak gravitational force is worth reading on the topic of *Apāna* and *Prāṇa* in chapter 6. In the electromagnetic force, the photon absorbs *Dhanañjaya* etc. *Raśmi*s from front and itself travels in that direction, due to this reason, the energy is not leaked, hence comparatively, its strength is high.

One more thing to be noted here is that some amount of repulsive force also exists with gravitational force to an extent. This repulsive force exists due to the '*Asura Tattva*' between the two objects or two particles. If there is no repulsive force along with the attractive force, the entire cosmos will collapse. However, this never happens and will never happen too. If there is no attractive force and only repulsive force is present, the cosmos cannot be formed, not even a single particle.

10.3 Gravitons (*Gurutvāṇu*)

The mysterious combination of *Paṁkti and Bṛhatī-Triṣṭup* and *Sūtrātmā Vāyu* with the help of *Māsa* or *Ṛtu Raśmi*s having *'Om' Vāk Raśmi* produces

'Gravitons', as conceived by modern science, which is the cause of gravitational force.

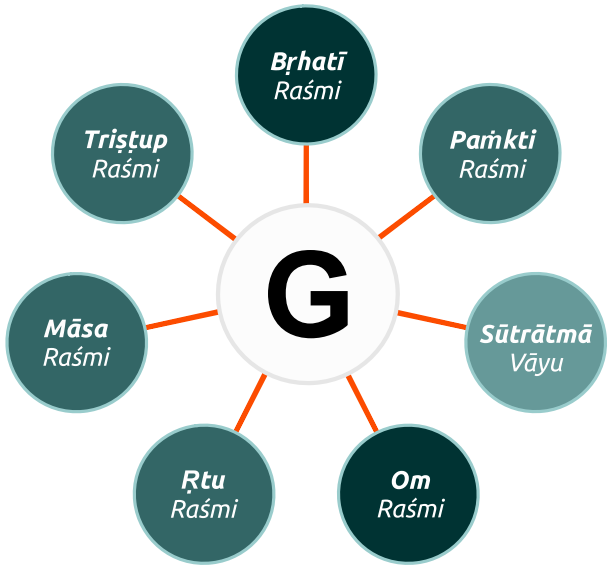


Figure 10.5 Constituents of Graviton

Remember that modern science is not only unsure about graviton but also is confused about it. Some consider it is an imaginary particle. If we consider it as an imaginary particle, then the gravitational force will become imaginary too. When the particle is imaginary, how can we assume this force to be real? Nowadays, scientists have started saying that there is no gravitational force, a massive object does not attract another massive object. Instead, due to massive objects, the space gets distorted. Here some questions arise that how can mass distort space (massless)? Which one occurs first gravitational force or the distortion of space? Modern science has no answer to these questions.

10.4 The origin of the gravitational force in the cosmos

When in the cosmos, various types of *Chanda Raśmi*s are being generated, then -

āpo revatīḥ kṣayathā hi vasvaḥ kratuṁ ca bhadraṁ bibhṛthāmṛtaṁ ca.
rāyaśca stha svapatyasya patnīḥ sarasvatī tad gṛṇate vayo dhāt..

(*Ṛgveda* 10.30.12)

This *Nicṛttriṣṭup Chanda Raśmi* has already been iterated 100 times. By then, various types of *Chanda Raśmi*s are formed. At that time, the entire material of the cosmos begins to flow everywhere in the form of subtlest *Vāyu*. Remember that *Vāyu* here does not mean air but *Chanda Raśmi*s. Till that time, the energy, as known now, is not generated. Any particle or antiparticle known to modern science is not formed. When various types of *Chanda Raśmi*s are generated, then due to their compaction, at first, the energy known now is generated, wherein it's every quantum contains various types of subtle *Raśmi*s and forces.

Subsequently, this *Chanda Raśmi* iterates 260 times again in the same cosmic material; during this time, 360 types of other *Chanda Raśmi*s are formed. Then gravitational force is generated in the form of a particle (graviton) of those compressed *Raśmi*s, and this results in material getting compacted slowly. At that time, electrically charged particles also are formed. With this, the electromagnetic force is also generated. Also, the material is condensed and the formation of Nebula begins. At the same time, the colour of the material is red or reddish-brown (brass). Simultaneously, just before the formation of stars, various types of small nuclei begin to form.

You learnt in this Chapter

- According to *Maharṣi Kaṇāda*, in the absence of contact (*saṁyoga*) and '*saṁskāra*', an object falls to the ground due to gravitation.
- Specific *Raśmi*s from objects and particles, especially *Bṛhatī* and *Paṁkti Chanda Raśmi*s are continuously absorbed and emitted.
- Gravitons are formed due to a combination of *Paṁkti* and *Bṛhatī Chanda Raśmi*s.
- The more the mass of an object, the more *Bṛhatī* and *Paṁkti Chanda Raśmi*s are emitted from it, resulting in higher gravitational force.
- *Prāṇa Raśmi*s that generate gravitational and electromagnetic forces do not cease, even at an infinite distance.

- ✓ Due to the transmission of gravitons in all directions, gravitational energy is leaked. Also, due to repulsion in a similar type of *Raśmi*s, and relatively low attractive force existing between *Paṁkti* and *Bṛhatī Chanda Raśmi*s causes weak but extensive gravitational force.

EXERCISES

1. Explain the law of gravitation through *Vaidic* Physics.
2. What has *Maharṣi Kaṇāda* written about gravitation? Explain with example.
3. Why is gravitational force the weakest? Clarify.
4. In *Vaidic* Physics, what are the main constituents of the particle named 'Gravitons'?
5. Explain the origin of gravitational and electromagnetic forces from the *Vaidic* Physics point of view.

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CHAPTER 11

Charge

After learning about gravitational force, let us try to learn about those forces generated between electrically charged particles. There is no role of mass in such forces, though they necessarily contain mass. Let us understand an important force of all these, the electromagnetic force.

11.1 Electrical charge

When a glass rod is rubbed with silk, it starts attracting and sticking small pieces of paper etc. It exhibits a special behaviour other than the normal, and this special property of the substance is called 'electrical charge'. When you remove the sweater from the body, you may have heard the 'cht-cht' sound or may have seen sparks in it. Electrical charge is the reason for this too. For electrical charge, it is said-

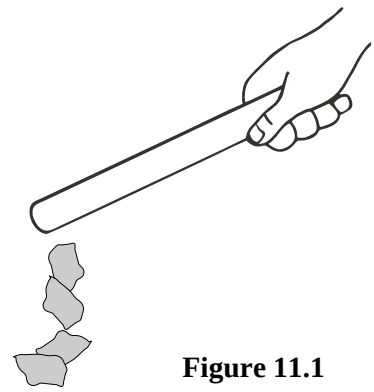

Figure 11.1

'A property of some elementary particles that gives rise to an interaction between them.'

(Oxford Dictionary of Physics, Page No. 69)

Means: it is the property that produces mutual attractive-repulsive forces in some elementary particles. However, what is the electrical charge? It is not clear in modern physics.

When an object acquires the charge, it is called a charged object. Modern science envisages two types of charges i.e. positive and negative. These charges are the main reason for attraction and repulsion between two objects. It has been known from general tests that like charges repel each other while, unlike charges attract each other.

However, deeper investigation poses many questions. Like, what is the reason behind the property of charge? Why electron is negatively and the proton is positively charged? Why do like charges repel and unlike charges attract each other? Means what the mechanism of attraction and repulsion is? What is the internal structure of charged particles? etc. These questions are still a puzzle for modern science. In this chapter, we will try to answer these questions based on *Vaidic* Physics.

11.2 Cause of charge

In the view of *Vaidic* Science-

- The charge is a property of the material.
- Material that provide activity and heat is called 'Electricity' (*Vidyut*).
- Electricity is the name of the material, while the charge is its property.
- The material that gives rise to the property of force is called electricity.
- Electricity generates and induces every particle.

As we know, any substance is made of electrons, protons and neutrons, and among these, protons and neutrons are made of even subtler quarks, and other particles and quarks are made from *Chanda Raśmi*s. Hence, to understand the cause of the charge, we need to understand the behaviour of these *Raśmi*s. All *Raśmi*s in the entire cosmos can be grouped in two groups - *Yoṣā* and *Vṛśā*. Of these, some *Raśmi*s behave as *Yoṣā* (male) while others behave as *Vṛśā* (female) with respect to former. Both *Raśmi*s have a natural tendency to attract each other due to the difference in the quantity of the *'Om'* and the *Manas Tattva*. Due to these properties of *Raśmi*s, particles and substances can attract each other or can generate charge. Now the question is, why do some particles remain neutral? The reason for this is that in such particles, both types of *Raśmi*s are in equal quantity.

Electrical charge permanently resides in a subtle particle only and cannot exist independently. Without electrical charge, no particle can exist. Due to this electrical charge only, the particle possesses properties of motion, force, light etc.

11.3 Difference between the positive and negative charge

A positive charge is made of various types of *Prāṇa Raśmi*s. *Prāṇa Raśmi*s

always attract *Marut Raśmi*s (smaller *Chanda Raśmi*s). *Ākāśa* (space) is also made up of these *Chanda Raśmi*s, due to these *Raśmi*s of *Ākāśa* together with *Prāṇa Raśmi*s hold the positively charged particle.

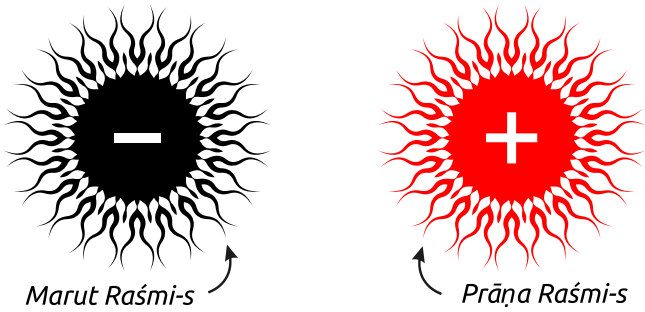

Figure 11.2

On the other hand, negatively charged particles are made of *Marut Raśmi*s. These attract the *Ākāśa Raśmi*s. This way, in between the two particles, *Ākāśa* behaves like a sheet with two children sitting on it. One child is glued to the sheet while the other holds it, and the one holding it pulls the sheet to pull the glued child closer to him.

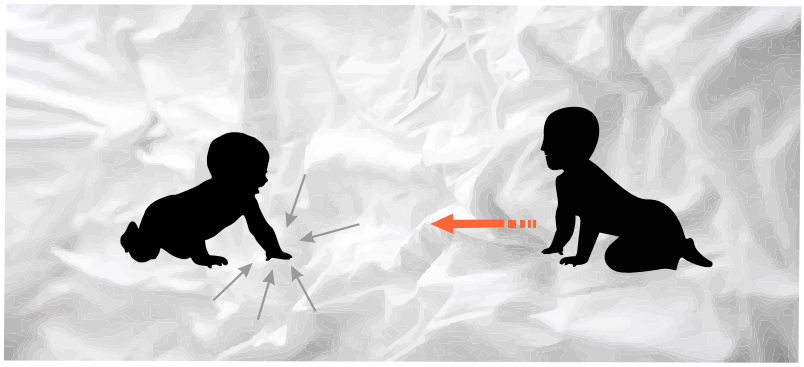

Figure 11.3

11.4 Process of attraction in the oppositely charged particles

According to Coulomb's law-

'The force between two charged particles is directly proportional to the product of their charge and inversely proportional to the square of the distance between them.'

Means -

$$F = K_e \frac{q_1 q_2}{r^2}$$

Here, q_1 and q_2 are the charges, and r is the distance between them. F is the force applied between them. Similar to the formula of gravitational force, there is also a constant here, represented by K_e (its value = $9.0 \times 10^9\ Nm^2C^{-2}$). By this formula one can find the force between the two charged particles, but what is its mechanism? Why are the two charged particles attracting each other? Modern science has, till now, no answer to these questions, but the scientific interpretation of *Aitaraiya Brāhmaṇa* text (*Veda Vigyan Alok*) has the answer to it. According to it, positively charged particles have *Prāṇa Raśmi*s with a predominance of *Vyāhṛti Raśmi*s (*Bhūḥ*, *Bhuvaḥ* and *Svaḥ*). When two positively and negatively charged particles come closer, these *Vyāhṛti Raśmi*s showers towards negatively charged particles. Due to their attraction, the *Marut Raśmi*s present in the negatively charged particles, are attracted outwards getting towards *Vyāhṛti Raśmi*s along with *Dhanañjaya Raśmi*s. If this is not the case, then *Dhanañjaya Raśmi*s cannot attract *Marut Raśmi*s.

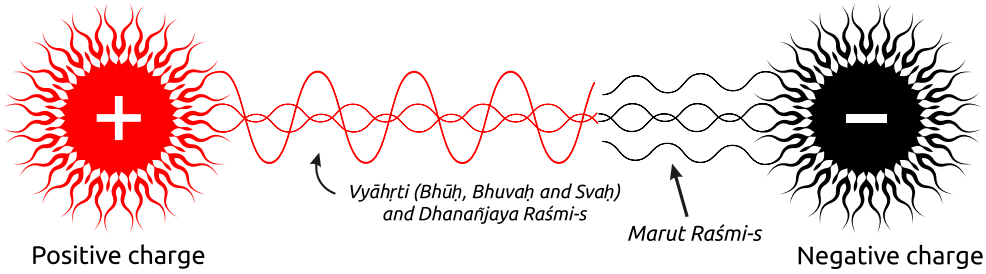

Figure 11.4 Attraction of *Vyāhṛti Raśmi*-s by *Marut Raśmi*-s

A particle that has more *Prāṇa* or *Marut Raśmi*s will exert more force. The *Raśmi*s from a charged particle is emitted in all directions equally, just like gravitational force, due to which this force is also inversely proportional to the square of the distance.

Modern science considers, exchange of mediator particles (photons) between the charges as the origin of force. Scientists call this stream of photons the ‘field’. Now, the question is, where does this photon come from or how does it originate, and why does it get exchanged?

As we have mentioned earlier that positively charged particles originate due

to compression of *Prāṇa* etc. *Raśmi*s. Due to this, it has a high density of *Prāṇa*. Hence, the positively charged particle emits some parts of *Prāṇa Tattva* along with *Dhanañjaya Prāṇa* in *Ākāśa Tattva*, which combines with *Marut Raśmi*s emitted from negatively charged particles to form mediator particles.

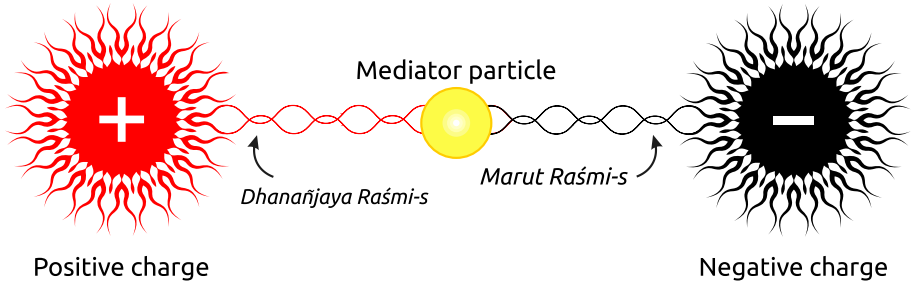

Figure 11.5 Creation of mediator particle between opposite charges

These are not imaginary, but real particles and their lifespan are too short that modern technology cannot detect them. Mediator particle has both *Prāṇa* and *Marut Raśmi*s. Hence it is attracted to both charges and oscillates between the two, which leads to its motion causing the warping of *Ākāśa* (space) present between the positive and negatively charged particles. When the warping of this *Ākāśa* (space) happens to the maximum extent, which means there is the least distance between the positive and negatively charged particles, the mediator particles disintegrate into the components and lose their existence.

11.5 Mechanism of repulsion between charged particles

Modern science tries to explain the reason for the repulsion between like-charged particles; however, it cannot explain the attraction between unlike charges. According to the *Vaidic Raśmi* Theory, when there are two like-charged particles, then both emit *Dhanañjaya Prāṇa* or *Marut Raśmi*s. Due to their similar nature, there is no attraction among them. Also, the other fact is, there always exists *Asura* energy between two or more particles, whose effect is always repulsion and retraction. If there is no attraction among the *Raśmi*s emitted by them, then *Asura* energy will repel those objects. Due to this reason, similar types of *Raśmi*s mutually collide with each other and turn back, causing the repulsive force instead of the attractive force on the two particles.

11.6 There is much more…

Let us try to explain the process of attraction between two charged particles in detail.

We are aware that *Agni* (*Prāṇa*) dominant particle is positively charged while *Soma* (*Marut*) dominant particle is negatively charged. From positively charged particles, very high-speed *Dhanañjaya Prāṇa Raśmi*s and from negatively charged particles, very subtle *Marut Raśmi*s are emitted and travel towards each other. *Sūtrātmā Vāyu* covers both types of particles, but it is denser at the periphery of the particle. Field particles are produced by the combination of *Dhanañjaya Prāṇa*s, *Marut Raśmi*s and *Sūtrātmā Vāyu*. Their speed is equal to the speed of electromagnetic waves. In this process, *Dhanañjaya Vāyu* first reaches the negatively charged particle, and the field particles ride on it and begin travelling to negatively charged particles. Next, both the charged particles mutually come closer to each other. In this situation, the continuously flowing *Prāṇa* and *Apāna Raśmi*s within and outside the particles come closer to each other. Later, in the end, the particles come very close to each other and bind themselves to each other. This force is not due to field particles, but due to these *Dhanañjaya*, *Marut* or *Sūtrātmā Vāyu Raśmi*s and these field particles are also generated by these *Raśmi*s.

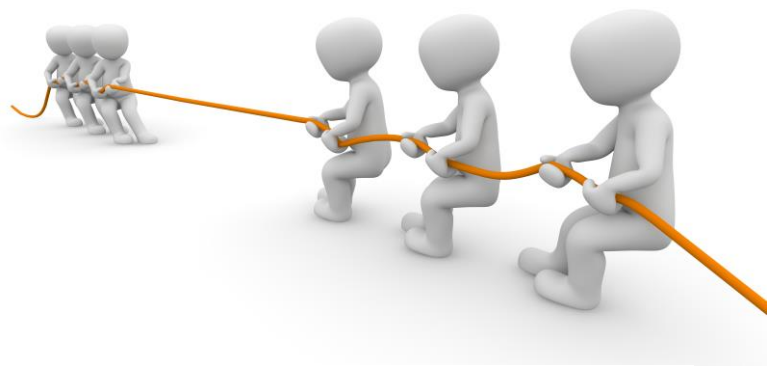

Figure 11.5

After this, the field particles bind the charged particles like a rope. Just like two persons holding the rope at two ends are bound to each other by their own force and not by the force of the rope; the rope has been tied using the force of their muscles; similarly, the aforementioned *Prāṇa* etc. *Raśmi*s are emitted from

both the charged particles is the root cause of the force. Furthermore, these *Raśmi*s not only clench the field particle type rope but generate it also, like if both the persons have created the rope.

There is also a big mystery that the effective electromagnetic force of field particles is one-fourth of the effective force of *Dhanañjaya Prāṇa Raśmi*s. Therefore, when field particle is generated by the combination of *Dhanañjaya, Prāṇa, Marut Raśmi*s and *Sūtrātmā Vāyu*, then a *Gāyatrī Chanda Raśmi* originated from *Sūtrātmā Vāyu* provides energy and force to that field particle and associates it with itself, and *Dhanañjaya Prāṇa Raśmi* provides motion to it.

This *Gāyatrī Chanda Raśmi* vibrates the field particle. Along with this, it binds it with *Sūtrātmā Vāyu.* This process happens in such a way as if those particles have controlled and bound the *Sūtrātmā Vāyu Raśmi*s with them. At that time, those particles kept vibrating and flowing in the *Ākāśa Tattva* (space) located between the two charged particles. This is the process of attraction between two particles in the entire cosmos. Combined particles created in this way are moving around everywhere in this cosmos.

You learnt in this Chapter

- ✓ The material that produces activity and heat is called electricity.
- ✓ Electricity is material, while the charge is its property.
- ✓ The material which gives rise to the property of force is called electricity.
- ✓ In this cosmos, there are two types of *Raśmi*s - *Yoṣā* (male) and *Vṛśā* (female).
- ✓ Both types of *Raśmi*s have a natural tendency to attract each other due to the difference in the quantities of *Manas Tattva* and *'Om'*.
- ✓ It is due to electrical charge only that a particle has force, motion, light etc., attributes.
- ✓ Positively charged particles are made of various types of *Prāṇa Raśmi*s, while negatively charged particles are made of *Marut Raśmi*s.

- ✓ *Marut Raśmi*s attract *Ākāśa Tattva*.
- ✓ *Prāṇa Raśmi*s present in positively charged particles dominates *Vyāhṛti Raśmi*s (*Bhūḥ, Bhuvaḥ,* and *Svaḥ*).
- ✓ The more *Prāṇa* or *Marut Raśmi*s in a particle is, the more is the force of the particle.
- ✓ *Prāṇa Tattva* combines with *Marut Raśmi*s to form mediator particles.
- ✓ There is a repulsive force between like natured *Raśmi*s.
- ✓ The effective electromagnetic force of field particles is one-fourth of the effective force of *Dhanañjaya Prāṇa Raśmi*s.

EXERCISES

1. Explain electrical charge as defined by modern physics. Also, define it by *Vaidic* Physics.
2. Why is the charge of two types? What are the differences between them? Explain them from the *Vaidic* Physics perspective.
3. What is the mechanism of attraction between the unlike charges?
4. Explain the working principle of repulsion between like charges.
5. What are ‘field particles?’ What is their role in attraction, and how are these generated during attraction?

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CHAPTER 12

Formation of Elementary Particles

Modern physics acknowledges the formation of quanta and elementary particles right from the beginning of creating this cosmos. It believes that it is impossible to have a material subtler than these quanta and elementary particles. In contrast, according to *Vaidic* Physics, these particles are formed with the formation of *Agni Mahābhūta*, much later, after several steps in creating the cosmos. Before their formation, materials from *Kāla* and *Mahat-Tattva* to *Vāyu Mahābhūta* etc. are already created, and we are already aware of it.

According to the flowchart given after Chapter-2, the *Agni Mahābhūta*, which can be called quanta and elementary particles in modern physics terminology, is formed in the 10^{th} step. With this, the readers can themselves analyze how far modern physics is from understanding the fundamental material of this cosmos.

12.1 Features of quanta and elementary particles in brief

Mana, *Vāk*, *Prāṇa* and *Chanda* etc. *Raśmi*s are not destroyed during the continuance of the cosmos. These materials possess latent glow and force, are in continuous motion and spread in the entire cosmos.

These materials disperse their subtle *Raśmi*s on other grosser *Raśmi*s. Due to these *Raśmi*s, various types of forces like attraction etc., are generated in the matter of this cosmos. Further, the variation in the proportion of these *Raśmi*s, variation in the spatial orientation and variation in quantity results in the formation of different particles and quanta. Various particles of this cosmos are condensed forms of various thread-like vibrating subtle entities. No particle is completely solid and does not have a definite shape. While being free, they are bound by *Sūtrātmā Vāyu*. Due to this bonding only, they can create various substances through mutual attraction and repulsion. *Prāṇa* etc. *Raśmi*s, present in the elementary particles are strongly bound together, resulting in and

acquiring a particle's form. If there were no such strong bonding in *Prāṇa Raśmi*s, then there would have been no possibility of forming any elementary particle or any other particle.

Both these types of materials are a form of *Agni Mahābhūta*. The process of creation of both types of materials is basically the same. The *Agni Mahābhūta* is formed after *Vāyu Mahābhūta*, by the specific combination and compaction of the material created till then. The entire cosmos exists in the form of various *Prāṇa* and *Chanda Raśmi*s before creating elementary particles and electro-magnetic waves. All these *Raśmi*s are created due to subtlest *'Om' Raśmi,* which exists in *Manas-Tattva* or *Ahankāra*. These *Raśmi*s cannot be compared with any wave of modern science, instead, these are the cause of their formation.

12.2 Formation of elementary particles and quanta from *Vāyu Tattva* (vacuum energy)

The mixture of *Prāṇa* and *Chanda* etc. *Raśmi*s is homogeneously distributed everywhere, with the name *Vāyu*. In terms of modern science, it can be called 'vacuum energy'. Here 'homogeneous' does not mean that there are no fluctuations and motion, but even when it exists, the material is neither denser nor capable of behaving like a wave. Just like a vortex is produced in the running water of the river, *'Om' Chanda Raśmi* stimulates *Sūtrātmā Vāyu*, *Nivid* (*Māsa*) and *Bṛhatī Chanda* etc. *Raśmi*s and produce vortex at numerous places in the *Vāyu Tattva*.

This process has three steps, wherein *Gāyatrī, Triṣṭup-Bṛhatī* and *Jagatī Chanda* respectively play an important role. The density and quantity of *Raśmi*s in quanta is lesser than particles, even though the same process creates both. Before the beginning of the vortex, one *Nicṛt Triṣṭup Chanda Raśmi* vibrates a hundred times in *Vāyu Tattva*, and only then the vortex begins and later after several steps, the quanta begin forming.

After that, the so-called elementary particles like leptons and quarks etc. are formed. It is not just *Sūtrātmā Vāyu* and *Nivid* etc. *Raśmi*s which compress the *Chanda Raśmi*s, but *Prāṇa*, *Apāna*, *Vyāna* etc. *Raśmi*s too play a role in it. When these compressor *Prāṇa Raśmi*s are weaker than 'to be compressed' *Raśmi*s, then compression process is not possible. However, when these are extremely powerful, then compression is enhanced to produce elementary particles. Also, when the compressor *Raśmi*s are stronger than 'to be compressed' *Raśmi*s, but

not too stronger, then quanta are formed. Different *Chanda Raśmi*s exist in pairs all over the cosmos, i.e. in various elementary particles, *Ākāśa Tattva*, and quanta. Both *Chanda Raśmi*s in pairs present in the quanta are equally penetrating, active and luminous.

On the contrary, both *Chanda Raśmi*s in pairs present in *Ākāśa Tattva* and elementary particles have some variation in luminosity and activity. From this point of view, *Ākāśa* and elementary particles are somewhat similar. Due to this reason, when compared with quanta, elementary particles exert a greater effect on the *Ākāśa Tattva* by their mass or charge. Further, interactions such as mutual attraction among particle-quanta and quanta-*Ākāśa Tattva* are relatively weaker.

Regarding various elementary particles, *Vaidic* Science reveals that there is a similarity in the structure of the particles and stars. In both, the core and the outer part separately rotate at mutually different speeds. Again, the presence of *Prāṇa* etc. *Raśmi*s in different parts of both is not exactly the same, but there is some difference.

According to *Vaidic* Science, any particle is as follows-

1. The *Prāṇa* etc. *Raśmi*s are relatively denser and condensed, which is enclosed from all sides. This enclosure is of *Sūtrātmā Vāyu* etc. *Raśmi*s.
2. The enclosure of *Sūtrātmā Vāyu* is only on the outer periphery, but not inside.
3. This *Sūtrātmā Vāyu* restricts the *Prāṇa* etc. *Raśmi*s within it i.e. does not allow it to scatter.
4. This enclosure separates the particle from *Prāṇa* etc. material pervading outside. That particle is enclosed similarly to humans wearing clothes.
5. This enclosure is not rigid or is explicit, but is of *Raśmi*s like *Sūtrātmā Vāyu* etc., which generally cannot be experienced.
6. The particle never violates this invisible enclosure. Even if it does, then only for a short period.

Here, deep but brief science of particle's properties has been presented, which modern science has never understood.

12.3 Formation of Photons

The mixture of *Prāṇa* and *Vāk Raśmi*s present in the cosmos in the form of *Vāyu Tattva* get encircled by *Ākāśa Tattva* and get compressed. Then this

compressed *Vāyu* is condensed and begins glowing. This condensed glowing particle is the particle of light (photon) of electromagnetic waves. These photons get covered with subtle *Prāṇa*, *Apāna* etc. *Raśmi*s and begins spreading everywhere. Next, under the influence of one *Daivī Triṣṭup* and one *Nicṛt Daivī Triṣṭup* or *Daivī Paṁkti Chanda Raśmi*, *Sūtrātmā Vāyu* circumscribe various photons and provides them proper structure.

When *Prāṇa*, *Apāna* etc., begin moving in an extended area, i.e. their movement is not restricted to a limited area; during that time, they compress themselves and combine to acquire the form of photons. Then these photons get surrounded by *Sūtrātmā Vāyu* and travel at high speed in the entire cosmos with *Dhanañjaya Prāṇa Raśmi*s, which causes the entire cosmos to glow. The speed and energy of these *Prāṇa*s are pretty high but not equal to the speed of light. But, when the energy combines with *Dhanañjaya Raśmi*s and travels in the form of a photon, then, except *Dhanañjaya Prāṇa Raśmi*s, their speed is higher as compared to particles of similar type and remains same in a single medium. Here, the speed of light and the stability of the speed of *Prāṇa Raśmi*s is also proved.

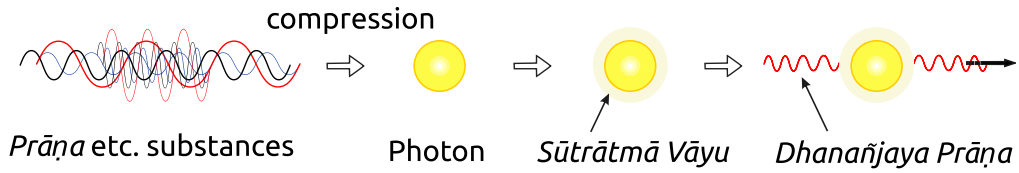

Figure 12.1 Formation of Photon

Question- When the cause of speed of photons is *Dhanañjaya Raśmi*s, then why is the speed of photons not equal to *Dhanañjaya*?

Answer- Photon is a condensed form of various *Raśmi*s, and so it has some mass too, and there is subtle friction while travelling in *Ākāśa*, as *Ākāśa* too is a material made from these *Raśmi*s only. On the other hand, *Dhanañjaya Raśmi* is a type of vibration in *Manas Tattva* whose speed is very high, and its friction with *Manas Tattva* is negligible.

12.4 The process of formation of elementary particles

Let us, now understand the process of formation of so-called elementary particles. At the time when *Nivid Raśmi*s interact with *Gāyatrī* etc. *Raśmi*s, the formation of the core of the elementary particles takes place at the outer and

frontal edge of *Nivid Raśmi*s. After this, these *Gāyatrī Raśmi*s transform into *Triṣṭup* and *Bṛhatī Raśmi*s, and at that time, the centre of the formation of elementary particles gets shifted to their middle region. Next, *Jagatī Chanda Raśmi* originates. This *Raśmi* is formed from the *Triṣṭup*, and *Bṛhatī Chanda Raśmi*s formed earlier. During its formation, the centre of formation of the elementary particle gets shifted to the rear portion of *Jagatī Raśmi*, and the formation of the elementary particle is completed here.

Immediately after its formation, the elementary particle moves in the direction opposite to the movement of *Jagatī Chanda Raśmi*. By this process, photons, neutrinos, electrons, quarks etc., are created. Modern science has no knowledge of the formation of elementary particles at all. This entire process is completed by compression of *Vāyu Tattva* by *Ākāśa Tattva*.

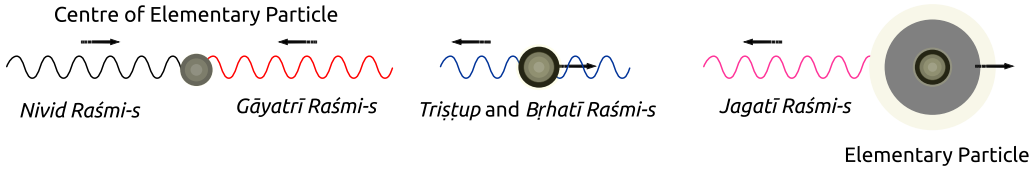

Figure 12.2 Process of formation of elementary particles

In all the three stages of formation of elementary particles, *Nivid Raśmi*s are the only ones, which travel like the sunrise and sunset. As there is no change in the sun, similarly, there is no change in these *Raśmi*s. These combine with various *Chanda Raśmi*s to create new particles through various steps.

1. At the first, the subtle *Raśmi*s of one each *Ṛk* and *Sāma* originate and mutually combine.
2. After that, *Prāṇa-Apāna* etc. *Prāṇa* and *Gāyatrī Raśmi*s originate and accompany mutually. At this time, *Anuṣṭup Raśmi*s also originate.
3. Next, in the third stage, *Māsa* i.e. *Nivid Raśmi*s combine various *Raśmi*s originate, and *Prāṇa* and *Vāk Raśmi*s start combining with them; and *Uṣṇik* and *Paṁkti Raśmi*s originate and accompany with *Māsa* etc. *Raśmi*s.
4. After this, *Raśmi*s that eliminate dark energy and *Triṣṭup*, *Bṛhatī* and *Jagatī* originate and accompany. At this time, *Ākāśa Tattva* starts expanding.
5. Post this, various elementary particles, photon, quark, electron, neutrino,

etc., are being formed. At the same time, powerful electric waves which control the dark energy are formed.

This way, the elementary particles of modern science are formed by a five-step process.

12.5 Let us understand this process in detail

An additional process goes on in the cosmos during the preliminary phase of the aforementioned five steps process, which creates a group of *Chanda Raśmi*s, which are essential for the formation of the elementary particles and later these *Raśmi* groups are compressed to form suitable particles. This process is as follows-

Two *Anuṣṭup Chanda Raśmi*s that combine various *Chanda Raśmi*s, these two conjoined *Raśmi*s combine with the third *Raśmi*. By this triple combination, a '*Trika*' is formed by *Chanda Raśmi*s. Such innumerable *Trika Raśmi* groups wander in the cosmos and initiate the formation process of various materials. The two *Anuṣṭup Raśmi*s combines with the third *Raśmi* at the separate ends.

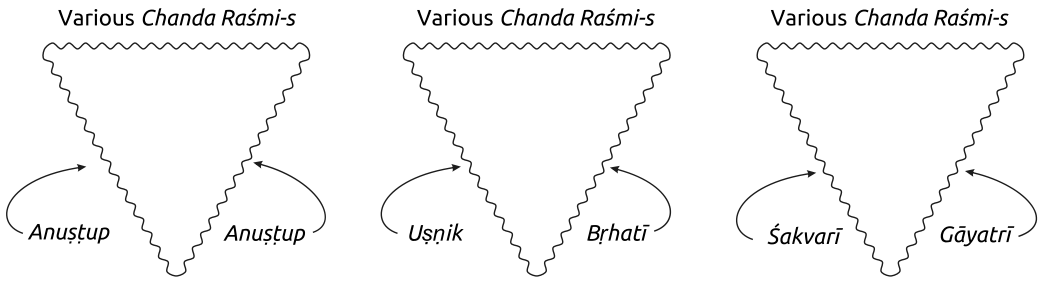

Figure 12.3 Three types of *Trika* in the cosmos

After the formation of this *Trika*, two other types of *Trika* are further originated. Of these, the first *Trika* is created by the combination of *Uṣṇik* and *Bṛhatī Chanda Raśmi* with a third *Raśmi* at separate ends.

With the formation of this *Trika*, quanta of electromagnetic radiations and elementary particles are formed. These particles acquire attraction and repulsion forces as the electrical charge is formed. As a result, light and heat are enhanced and intensified. Post this phase, the third *Trika* of *Raśmi*s is formed, which is formed by the combination of one *Śakvarī* and one *Gāyatrī Chanda Raśmi* with

other *Raśmi* at separate ends.

This causes the energy of various elementary particles and electromagnetic radiations to reach super-high levels, resulting in distress of all elementary particles and electromagnetic radiations. As soon as they come in contact with dark energy, they destroy it. One part of the *Trika*, the *Gāyatrī Raśmi*s, stabilize and regulate this state of distress.

At this time, intense sound waves[7] begin to generate in the cosmos. This type of process begins before the formation of electromagnetic waves and elementary particles and continues until the formation of stars. With the formation of the second *Trika*, materials like *Raśmi*s etc., begin compacting. At the time of formation of stars, If this process continues with high speed, it means such *Trika*s continue to form, then the condensed material for the formation of stars and nebulae can become extremely compressed and explode by gaining a lot of mass and the force of gravity. Due to this, balancing the fixed limit of mass and gravitational force with its size, when formed, at that time the process of formation of the aforementioned *Trika Raśmi*s reverses, due to which further condensation of material is stopped and proper shape of stars is formed. Every star of this cosmos is formed by this process only. The supreme conscious entity mandatorily plays a vital role in forming these *Trika*s and balancing the entire process, as the non-living *Raśmi*s cannot do these things by themselves.

12.6 The structure of elementary particles

Until now, modern science has not been able to identify the structure of the elementary particles (like electrons, photons etc.) by any technique. It is unlikely that it will know it in the future as well. On the other hand, according to *Vaidic* Science, the structure of elementary particles is as follows-

1. In illuminated particles (leptons), first, there is a layer of *Mana* and *Vāk Tattva*, then the *Prāṇa* etc. ten *Prāṇa*s, again, the condensed form of *Chanda Raśmi*s, then the glowing envelop of the *Chanda Raśmi*s, and in the end, there is a continuous shower of *Mana*, *Vāk*, *Sūtrātmā Vāyu* and *Prāṇa* etc. ten *Prāṇa*s. Finally, due to the envelope of *Chanda Raśmi*s, the particle glows.

[7] If research is done on these, then these sound waves can be discovered in future.

2. In the structure of photons (quanta of light), the envelope of external *Chanda Raśmi*s is thicker, while the envelope of condensed *Chanda Raśmi*s is too thin; hence their mass is less while the brightness is more.

3. Apart from them, there are some particles, which have less glow. Their structure does not have the envelope of external *Chanda Raśmi*s. Despite having less glow, these are not of dark matter or dark energy.

The structure of leptons (illuminated particles), photons and quarks (less illuminated particles) can be as below-

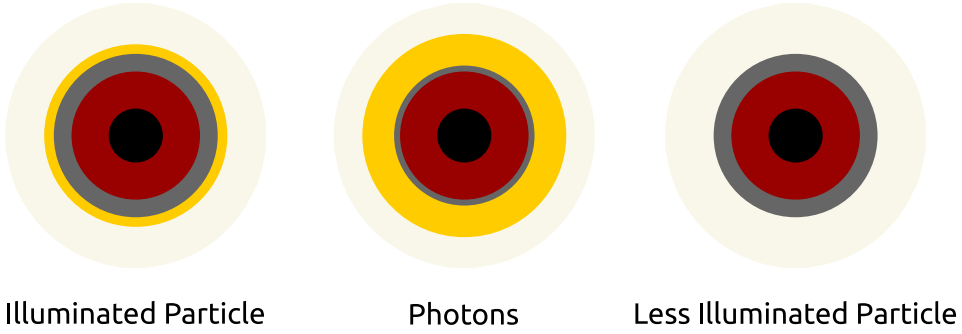

Figure 12.4

12.7 Rotation of the particles on their axis

Various visible particles and celestial bodies are covered with three types of *Gāyatrī Raśmi*s, and along with those *Raśmi*s, the *Ākāśa Tattva* present around those particles and celestial bodies also getting compressed a little and covers those particles and celestial bodies. All these three *Raśmi*s are formed by a *Prāṇa Tattva* named as *Prāṇa*. These particles and celestial bodies are stimulated to rotate on their axis by these *Raśmi*s along with some other *Raśmi*s and the effect of *Ākāśa Tattva*. Along with this, the cover of *Raśmi*s surrounding particles and celestial bodies also rotates as periphery. This process increases the attractive forces in them.

12.8 Process of the combination of particles

In this cosmos, every elementary particle, molecule and ion are covered with various types of subtle *Raśmi*s in six layers. Of these, some materials are

present at both places - within and outside the particles. In a practical view, all these materials are effective within and outside the particles. When these particles combine with another particle, a subtle form of dark energy is originated between them and tries to produce repulsive forces. At that time, the six-layered material is intensely activated between both of them.

In this sequence, first, the electromagnetic field gets disturbed and enters into two *Anuṣṭup Chanda Raśmi*s, and at that time, the characteristic properties of the electromagnetic field become invisible.

This is because when positive and negative charged particles combine mutually, then both their charge disappears, and a new particle without charge is formed. In the next step, the *Anuṣṭup Chanda Raśmi*s which absorbs *Vidyut* (a subtle form of electricity) assimilates into subtle *Marut Raśmi*s. In *Marut Raśmi*s, '*Him*' *Raśmi*s are too present. At this time, the indications of *Anuṣṭup Chanda Raśmi*s too disappear. Next, the *Soma Raśmi*s containing '*Him*' *Raśmi*s, give up their signs after getting absorbed into *Raśmi*s present in particles like *Bṛhatī*, *Triṣṭup* and *Jagatī Raśmi*s having *Svaḥ Raśmi*s. After this, these *Bṛhatī* etc. *Raśmi*s are also absorbed into *Gāyatrī Chanda Raśmi*s having *Bhūḥ Raśmi*s and then become inactive.

It is these *Gāyatrī Chanda Raśmi*s that neutralize the subtle effects of dark energy, and the repulsive effect of dark energy disappears. In the end, these *Gāyatrī Raśmi*s too assimilate into various *Prāthamika* (primary) *Prāṇa Raśmi*s having *Bhuvaḥ Raśmi*s, where there is no influence of dark energy. This way, the synthesis of two particles or quanta or their mutual combination (like a particle with particle and quanta with quanta) occurs unhindered. Modern science is unaware of the subtle and deep mystery of this process of combination at all.

When two particles are ready to combine mutually, they do not join directly, but they vibrate and revolve around together and then combine. When these particles come close together, then the dark energy between them creates a hindrance, causing the particle's motion to stop suddenly. It is to be remembered that the dark energy, which is present everywhere in the cosmos, does not hinder the motion of *Prāṇa* and *Apāna* etc. The subtle electricity produced from the *Prāṇa* and *Apāna* controls or destroys the dark energy and travels in front of those particles and provides a safe path for them. In this way, the particles mutually start to travel towards each other.

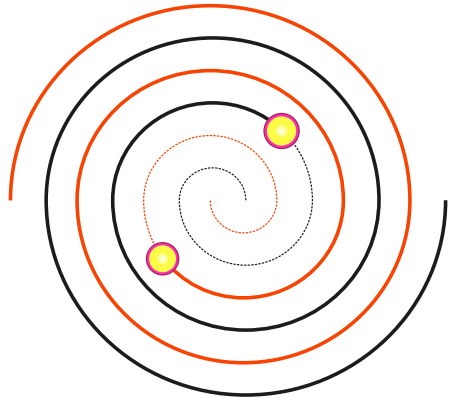

Figure 12.5 Combination of two rotating particles

For every combinable particle, there does exist an electrically positive, negative or neutral charge. That charge plays an important role in the mutual attraction of both particles. When the two particles come closer, then the *Ākāśa Tattva* and electromagnetic field between them extend to some extent. Due to this, both two particles start capturing the electrical waves from each other and dark energy gets free from waves.

It is the opposite poles of the particles that combine with each other. When two particles mutually interact, one of them is hyperactive and mobile. It rushes in the northern pole direction and combines with the southern pole of the relatively less active particle present ahead of it. At this time, *Chanda Raśmi*s of both particles begins to unite.

When two particles mutually combine, they keep attracting various types of subtle *Raśmi*s present around them. This way, the process of the combination of two particles proceeds.

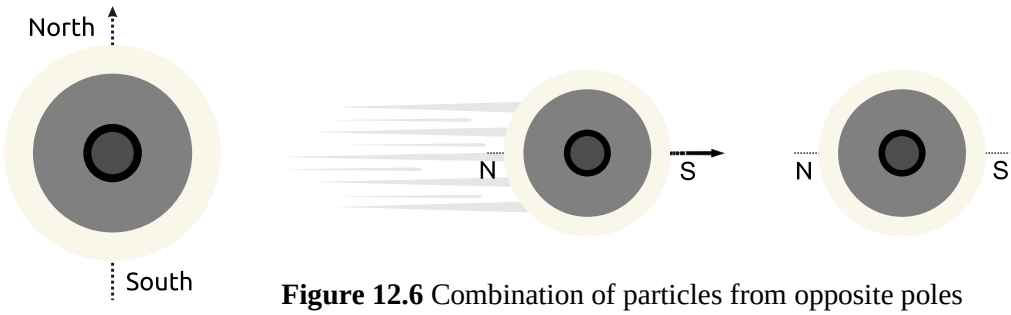

Figure 12.6 Combination of particles from opposite poles

When a photon emits from or combines with a nucleus or an electron etc., at that time, three *Gāyatrī Raśmi*s also combine with it. At the same time, these *Raśmi*s create a 'neck like structure' between the electron and photon, which means the *Ākāśa Tattva* shrinks as shown in the fig. 12.7. In that structure, various subtle *Raśmi*s also arrive, which control the repulsive and obstructive forces. These *Gāyatrī Raśmi*s provide such force to these electrons, quanta etc., that they can mutually combine or get separated. After this, that neck like structure vanishes to complete the synthesis or separation.

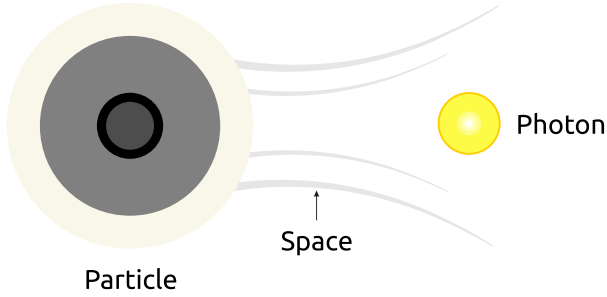

Figure 12.7 Process of combination of particle and photon

In the formation of a larger molecule, first, only two ions combine, and in this combination, many *Raśmi*s take part. After this too, these two combined ions remain active, and they gradually attract the nearby other ions and *Raśmi*s respectively, and in this manner, they create larger molecules. It is to be noted here that no large molecule can become suddenly by many ions combining, but there is a step by step process for its formation.

12.9 Fastest moving *Tattva* of the cosmos

In the entire cosmos, subtle *Prāṇa* named as *Dhanañjaya* has the highest velocity. Its speed is four times the speed of electromagnetic radiation. It is to be noted that modern science considers the speed of radiations of all forces equal to the speed of light. It is these *Dhanañjaya Raśmi*s that carry all the electromagnetic radiations with them. After these, the next lesser speed is of electromagnetic radiations. Modern science considers its speed to be the maximum among all the materials of the cosmos and is estimated to be 3 lakh kilometres per second in the vacuum. According to the theory of relativity, no material can travel faster than this.

Any particle may not travel faster than it, but the *Dhanañjaya Prāṇa Tattva*, which is subtler than these two, is faster than them. When these *Dhanañjaya Prāṇa Tattva* moves together with electrons and minute particles or quanta, they travel faster than those particles or quanta, just like the air, which carries dust particles and grass, is faster than those dust particles and grass. Modern science cannot detect the *Dhanañjaya* etc. *Prāṇa*s by any technique. Hence, knowing its speed by modern science is not possible.

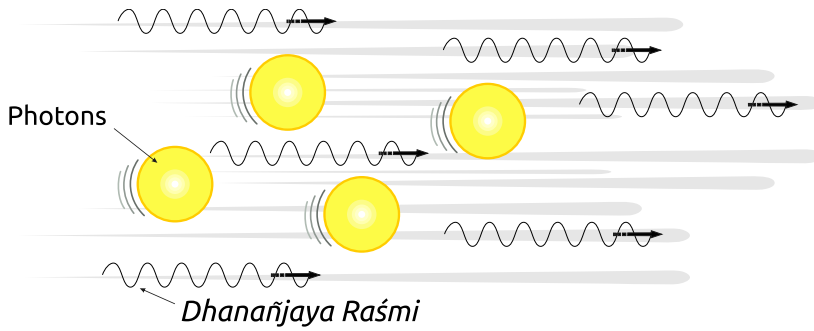

Figure 12.8 *Dhanañjaya Raśmi*-s carrying photons

The speed of *Dhanañjaya Prāṇa Raśmi*s radiated from the positively charged particles is higher than the electromagnetic radiations or mediator particles as conceived by modern science. The third high velocity, which is little lesser than the aforementioned both velocities, is of *Prāṇa-Apāna* or *Prāṇa-Udāna*. These subtle *Prāṇa* pairs remain combined with various particles and quanta and continuously flow inside and outside like a gyre. Their speed does not influence the speed of those particles and quanta. Instead, it provides force and energy to those particles and quanta. Their speed is a little higher than all other types of particles. After them lies the speed of particles of all luminous and dark materials. By this, it is proved that the speed of dark matter and electrons etc., luminous particles conceived by modern science are the least among all.

12.10 Particle with highest penetration power known so far

There are certain particles like ‘neutrino’ which have high penetration power. These particles can easily pass through earth etc. planets. These originate in the core of the planets and can travel unhindered to the sun’s core, while those originating in the core of the sun can pass through the earth conveniently. Generally, these do not interact with other particles. Hence their penetration

power is high, and the journey is unhindered.

The reason for this incredible power is that such particles travel either by combining with or by remaining surrounded by two *Anuṣṭup Chanda Raśmi*s. While travelling, in these *Anuṣṭup Chanda Raśmi*s, 64 *Manas* and *Ahankāra Raśmi*s generate various other *Chanda* type waves and strengthen the *Vāk Tattva*, which in turn inactivates any type of attraction or hindrance in the way. Alternatively, such attractions and obstructions are blocked by a divine cover of those newly formed *Raśmi*s of *Chanda Prāṇa* and that particle or neutrino crosses everything quickly and travels unhindered.

12.11 The envelop of subtle *Raśmi*s around particles

Subtle *Raśmi*s always surround various particles and quanta in this cosmos. Various molecules, atoms, ions too are surrounded by electromagnetic radiations etc. Along with it, they are activated and are in motion by those waves only. These waves have many layers. Subtler waves always cover and control the grosser waves. In these waves, *Chanda Raśmi*s, *Prāṇa Raśmi*s and in the end, *'Om' Chanda Raśmi*s are respectively present. When there is a combination of two or more particles, then the order of combination is such that it begins at the subtle enveloping *Raśmi*s to relatively grosser *Raśmi*s and then reaches to the particles. When there is separation, the same order is followed. If by chance, these enveloping *Raśmi*s are removed, then dark energy covers those particles, which results in the prohibition of the process of fusion or combination. Moreover, it is impossible that two particles fuse or combine mutually without these enveloping *Raśmi*s.

This chapter presents the properties and formation of particles and quanta, which is more profound and more fundamental than modern science.

You learnt in this Chapter

- ✓ In the cosmos, various particles are like a compressed form of threads, which vibrate and are condensed forms of subtle constituents.
- ✓ A mixture of *Raśmi*s like *Prāṇa* and *Chanda* etc. and named as *Vāyu* is filled

everywhere homogeneously. It is termed as 'vacuum energy' in modern science.

- ✓ *'Om' Chanda Raśmi* stimulates *Sūtrātmā Vāyu*, *Nivid* (*Māsa*) and *Bṛhatī* etc. *Chanda Raśmi*s and forms innumerable gyres in *Vāyu Tattva*.
- ✓ Quanta have less quantity and density of *Raśmi*s as compared to particles.
- ✓ When compressor *Prāṇa Raśmi*s are weaker than 'to be compressed' *Raśmi*s, compression process is not possible and when these are extremely powerful, then compression intensifies and produces elementary particles.
- ✓ When the compressor *Raśmi*s are stronger than 'to be compressed' *Raśmi*s, but not so stronger, then quanta are formed.
- ✓ Any particle is a relatively denser and condensed form of *Prāṇa* etc. *Raśmi*s and enclosed from all sides by *Sūtrātmā Vāyu* etc. *Raśmi*s.
- ✓ A mixture of *Prāṇa* and *Vāk Raśmi*s present in the cosmos gets covered by *Vāyu Tattva* and *Ākāśa Tattva* and is compressed. Then this compressed *Vāyu* is condensed and starts glowing. This condensed glowing particle is a photon (quanta of electromagnetic waves).
- ✓ Photons covered with *Sūtrātmā Vāyu* gain very high speed by *Dhanañjaya Raśmi*s.
- ✓ Two *Anuṣṭup Chanda Raśmi*s that combine various *Chanda Raśmi*s get conjoined and combine with a third *Raśmi* to form a '*Trika*'.
- ✓ A *Trika* is formed by the combination of *Uṣṇik* and *Bṛhatī Chanda Raśmi* with a third *Raśmi* at separate ends. With the formation of this *Trika*, quanta of electromagnetic radiations and elementary particles are formed.
- ✓ Various visible particles and celestial bodies are covered with three types of *Gāyatrī Raśmi*s, and due to their influence, these particles and celestial bodies are stimulated to rotate on their axis.
- ✓ In this cosmos, every elementary particle, molecule and ion is covered with various types of subtle *Raśmi*s in six layers.
- ✓ When two particles are about to combine mutually, they do not combine directly but vibrate and revolve around each other and then combine.
- ✓ It is the opposite poles of the particles that combine.
- ✓ When two particles mutually interact, one of those particles is hyperactive and mobile.

- ✓ When a quantum is emitted from or combines with a nucleus or an electron etc., then at that time, the *Ākāśa Tattva* shrinks to create a 'neck like structure' between the electron and quanta.
- ✓ Bigger molecules can never be formed suddenly by many ions combining together, but there is a step by step process for their formation.
- ✓ In the entire cosmos, subtle *Prāṇa* named as *Dhanañjaya* has the highest velocity. Its speed is four times the speed of electromagnetic radiation.
- ✓ Subtle waves always cover and regulate the grosser waves.

EXERCISES

1. Describe vacuum energy from the perspective of modern and *Vaidic* Science.
2. What is the process of formation of the elementary particles according to modern science?
3. What is the process of formation of photons?
4. According to *Vaidic* Physics, what is the difference between the structure of the elementary particles?
5. Why do the subtle particles rotate on their axis?
6. Describe the six-step process of the combination of two particles.
7. Prove that 'all elementary particles are formed from *Veda Mantrā*'.
8. Which material is the reason for the high speed of light, and what is its speed?
9. What is *Trika*? In the formation of elementary particles and quanta, how are the *Trika*s of *Chanda*s formed?
10. Which materials exist during complete dissolution (*Pralaya Kāla*)?
11. What is the difference between the structure of photons and leptons?
12. Why is the structure of subtle particles not fixed?
13. What is the difference between particle and quantum?

❋ ❋ ❋ ❋ ❋

CHAPTER 13

Energy

Today, the world extensively uses energy, but we are still unaware of its form. Science acknowledges various forms of energy, like potential energy, kinetic energy, electromagnetic energy, dark energy, vacuum energy, sound, heat, etc. These forms of energy keep converting into each other under different circumstances. However, the mechanism of this transformation is not known to modern science. It also does not know the reason for this transformation. In reality, until the properties and the structure of energy is known, it is impossible to know its mechanism.

13.1 Forms of Energy

Let us now understand the 'energy' from the *Vaidic* perspective. In *Vaidic* Science, an object having *Bala* (force) and movement *Prāṇa Raśmi*s is termed as energy.

1. Force is that attribute that holds and nurtures a substance.
2. Force is like an *Ātmā,* which wanders in an object.
3. All *Prāṇa* and *Chanda Raśmi*s are form of Force.
4. Due to force, all substances move towards each other, i.e. attractive force, and due to repulsive force, they move away from each other.

Hence, energy is that material, which holds a substance and provides it motion. Along with it, it is due to the energy that substances exist and remains meaningful. The *Cetana Tattva* (supreme conscious entity) creates the energy in the *Prakṛti* (fundamental cause of the cosmos). In this non-living world, this energy originates in the form of *'Om' Raśmi* and *Manas Tattva*. Next, *Vaidic* forms of energy like the *Prāṇa*, *Chanda* and *Marut* etc. *Raśmi*s originate. This energy cannot be compared with the energy known and utilized by modern science. The pairs of *Prāṇa* and *Chanda* or *Marut Raśmi*s are the reason for the origin of the energies known to modern science.

Let us now understand the energies known by modern science from *Vaidic* point of view-

1. Potential energy - Every particle or a body is a synthesis of various *Chanda Marut* and *Prāṇa Raśmi*s and exists in that form only, despite being in motion or is stationary. In them, these *Raśmi*s exists in combined form. That particle, quanta or body will not exist without them. It is covered by *Sūtrātmā Vāyu* and *Bṛhatī Chanda Raśmi*s on all sides, or, only these *Raśmi*s are responsible for compressing *Prāṇa* and *Chanda* etc. *Raśmi*s to create a particle or body. Any particle or body always tries to be in that state in which there is the minimum interaction and tension among the *Raśmi*s.

In the stationary position, *Prāṇa* and *Apāna Raśmi*s are too present around any particle or body, where *Apāna Raśmi*s vibrate inwards while the *Prāṇa Raśmi*s vibrate outwards. When an external force is applied to the particle or the body, then the factor that is applying the force transmits the energy to the body. This energy accumulates in the particle or the body and influences or changes the configuration of the *Prāṇa* and *Chanda* etc. *Raśmi*s present in them.

Whenever we pull or compress a spring or lift a stone by hand, then the configuration of *Prāṇa* and *Chanda* etc. *Raśmi*s, present in the spring or stone, is modified or influenced. When we leave the spring, then the configuration of *Prāṇa* and *Chanda* etc. *Raśmi*s present in it tries to revert to its initial position. This process causes vibration in the spring. On the other hand, when we drop the stone, the earth's gravitational force attracts it, and the force begins acting on the body. This causes changes in the *Raśmi* configuration again. This changes its potential energy into kinetic energy. Let us understand it by way of shown in fig. 13.1.

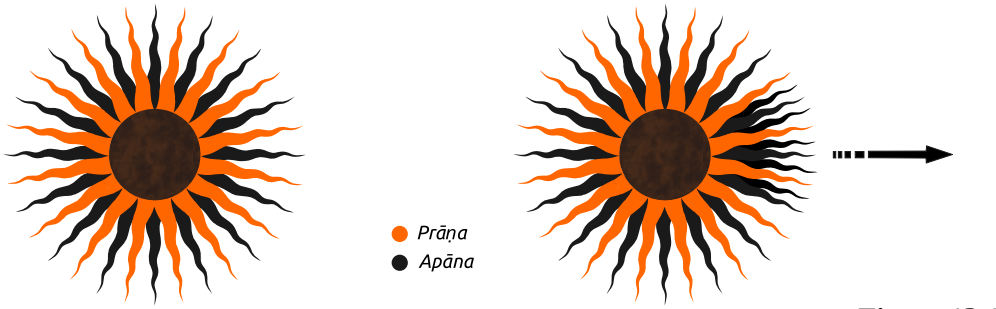

Figure 13.1

2. Kinetic energy- When we drop a stone down or throw a stone, at that time, the earth's gravitational force or our projectile force acts on the stone. This causes the configuration of various *Raśmi*s present in the stone to change. From our point of view, the following changes take place in both situations respectively -

(**a**) When the stone falls down, the *Prāṇa* and *Triṣṭup Raśmi*s existing in the form of earth's mass and gravitational force start attracting the *Apāna Raśmi*s present in the stone toward itself. Due to this, *Apāna Raśmi*s which was vibrating inwards the stone, start vibrating towards the gravitational pull. Due to the predominance of action in *Apāna Raśmi*s, that stone starts moving towards the earth. As it comes closer to the earth, the attractiveness of *Prāṇa* and *Triṣṭup Raśmi*s of earth towards the *Apāna Raśmi*s present in the stone increases. This is the reason that the gravitational force of the earth produces acceleration in that stone drop at a constant speed. However, modern science has not understood this working process.

(**b**) Whenever we throw a stone in a direction, then the projectile force of our hand influences and modifies the configuration of *Raśmi*s present in it. *Apāna Raśmi*s are dominant in our projectile force.

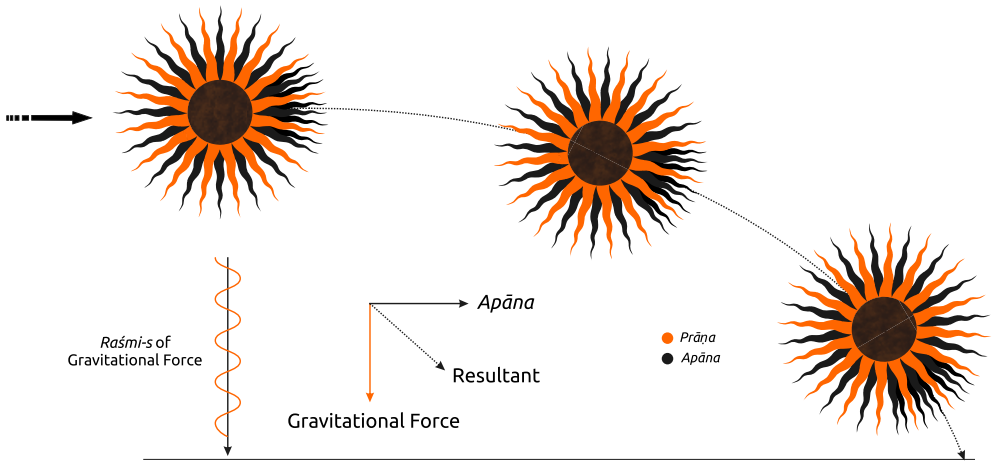

Figure 13.2 Mechanics of falling down of projectile body

This causes the configuration to be like *Apāna Raśmi*s that was vibrating and oriented towards inside a stone, now begin vibrating towards the projectile

force. This causes the stone to move in that direction. While in the motion, the earth's mass and gravitational force of the earth in the form of *Prāṇa* and *Triṣṭup* etc. *Raśmi*s also show their influence as discussed earlier, which causes that stone to follow a parabolic path and ultimately falls. See fig.13.2 for detail.

Question- Heat, light, and sound are generated when a stone falls and hits the earth. How does the kinetic energy change into heat, light and sound energy? What is its mechanism?

Answer- When a stone hits an object, the *Raśmi*s surrounding the stone also hit the *Raśmi* surrounding that object, especially, the active *Apāna Raśmi*s on the outer edge of the stone, get tangled with the *Raśmi*s of that object and *Raśmi*s of both get distressed. This excitation and attrition lead to the compaction of some *Raśmi*s forming photons and are visible as light. Some *Raśmi*s cause vibration in the molecules of both objects, causing heat, while other *Chanda Raśmi*s get tangled to produce *Vaikharī* form of sound. In this attrition, the configuration of *Raśmi*s and the cover of *Sūtrātmā Prāṇa* and *Bṛhatī Raśmi*s of both is distorted, which causes them to appear as broken or distorted or may appear to be distorted.

Question- Why is it so that we can throw an object having lesser density with lower velocity only, even if we apply the same force?

Answer- As we have indicated earlier when we throw a body, the arrangement of *Prāṇa* and *Chanda* etc. *Raśmi*s within and outside the body changes. In this change, the direction of *Apāna Raśmi*s is in the direction of the projectile, hence its motion too is in that direction. When the body is denser, the quantity of *Apāna Raśmi*s is higher along with its *Prāṇa Raśmi*s too are in the same direction, causing the high-density body to move with high velocity.

On the contrary, when the body is lighter, it has less amount of *Raśmi*s like *Prāṇa* and *Chanda* etc. and is less dense too. However, because both bodies are of equal volume, the obstructive *Raśmi*s (present in space) working on it are in the same quantity as denser objects. Hence, both experience the same frictional force, but the amount of energy transferred by our hands gets reduced. In fact, the *Prāṇa Raśmi*s present in small quantity can accumulate the small quantity of projectile *Apāna Raśmi*s and due to the presence of *Apāna Raśmi*s in that body in less quantity, the speed is also lesser relatively to the denser body. So, likewise, strike by a lighter body will produce lesser heat, sound and relatively lower impact.

3. Sound energy- Modern science only considers the '*Vaikharī*' form of *Vāṇī* (sound) as sound energy. According to *Vaidic* Science, any sound passes through the stages of *Parā*, *Paśyantī*, and *Madhyamā* and then reaches to *Vaikharī* state. Here, we will discuss *Vaikharī* in brief.

Modern science considers sound in form of pressure waves in any substance. The denser the substance, the greater is the speed of sound in it. However, what is the material in form of a soundwave that produces compression in a substance? How is the compression created in the atmosphere?

Vaidic Science believes that our vocal cord converts the *Madhyamā Chanda Raśmi*s into *Vaikharī* and propagates it outside. These *Chanda Raśmi*s combine with other *Chanda Raśmi*s present in the atmosphere or other substances and produce compression. This motion of compression in the atmosphere is considered by modern science as sound waves.

When a substance is dense, then due to the high density of *Chanda Raśmi*s, there will be many compression zones, causing it to appear to have a higher speed, i.e., the sound wave's speed will be more. When there is a vacuum, then the *Chanda Raśmi*s in it, can not produce that compression in the *Prāṇa* and *Chanda* etc., which can be heard by ear, due to the sparse state of vacuum. The reason for this is that our ears are not capable of capturing the vibrations of *Raśmi*s, while they can capture the vibration of molecules. Due to this, we have a misconception that a medium is required for sound to travel. In reality, this occurs due to our ear's limited ability to hear, but this is not the case in reality. Also, it is to be noted here that sound energy or *Vaikharī Vāṇī* cannot travel without a media, It requires a solid, liquid or gas as a medium.

However, '*Śabda*' (word) is considered as the attribute of *Ākāśa* (space). Hence *Vāṇī* does not need these tangible media, as its place is *Ākāśa*. Due to this reason, it has to be understood that *Paśyantī* and *Madhyamā* can travel in *Ākāśa* too; but *Vaikharī* cannot.

4. Vacuum energy- Modern science acknowledges the origin of various field particles in this energy only. It is also accepted that these particles are formed from it only. However, modern science does not know how and from where this energy is formed and how the field particles are formed.

In our view, the entire *Ākāśa* is filled with a mixture of *Sūtrātmā Vāyu* and

various *Raśmi*s like *Prāṇa*, *Marut* and *Chanda* etc. This mixture is the form of vacuum energy. Field particles are formed by the vacuum energy present between two combining entities when they come closer.

The *Prāṇa* and specially *Dhanañjaya* and *Marut Raśmi*s emitted from both entities, combined with *Prāṇa*, *Marut* and *Gāyatrī* etc. *Chanda Raśmi*s are present in vacuum energy to produce mediator particles. These are not imaginary particles as considered by modern science. However, their lifespan is indeed very less. Also, it is to be remembered that the combination of *Prāṇa* and *Marut*, *Prāṇa* and *Chanda* is the form of force and energy. No single *Raśmi* can become a form of vacuum energy. This energy fills the entire space uniformly.

It is called vacuum energy because it fills all the vacant space in the cosmos. Usually, there is no activity in it, but as soon as attractive or repulsive forces are produced between two particles or bodies, it means they come closer. There is an activity in the vacuum energy between them. If this activity does not occur, neither the attractive and repulsive forces nor the mediator particles will be generated.

5. Dark energy- This has been elaborated in the upcoming chapter of *Asura Ūrjā* (so-called dark energy). However, it is a fact that there is no such dark energy that exists now or existed earlier that initiated and expanded the cosmos with the Big Bang. Therefore, we will analyze the structure, properties and characteristics of *Asura Ūrjā* (dark energy) in the following chapters.

You learnt in this Chapter

- ✓ Energy is the material that holds various substances and makes it mobile.
- ✓ Energy originates in the form of *'Om' Raśmi*s and *Manas Tattva* in non-living entities. Next, energy originates in the form of *Raśmi*s like *Prāṇa*, *Chanda* and *Marut* etc.
- ✓ Every particle or object is a synthesis of various *Chanda*, *Marut* and *Prāṇa Raśmi*s and exists in that form only, even if it is in motion or is stationary.

- ✓ All particles or objects are covered by *Sūtrātmā Vāyu* and *Bṛhatī Chanda Raśmi*s on all sides.
- ✓ In the stationary position, *Prāṇa* and *Apāna Raśmi*s are present around a particle or object, where *Apāna Raśmi*s vibrate inwards while the *Prāṇa Raśmi*s vibrate outwards.
- ✓ When an external force is applied to the particle or the body, the energy is transmitted. This energy accumulates in the particle or body and influences or changes the configuration of the *Prāṇa* and *Chanda* etc. *Raśmi*s present in them.
- ✓ Entire *Ākāśa* is filled with a mixture of *Sūtrātmā Vāyu* and various *Raśmi*s like *Prāṇa*, *Marut* and *Chanda* etc. This mixture is the form of vacuum energy.
- ✓ The combination of *Prāṇa* and *Marut* and *Prāṇa* and *Chanda* is the form of force and energy. No single *Raśmi* can acquire the form of vacuum energy.

EXERCISES

1. What is energy? Explain from the *Vaidic* and modern physics point of view.
2. How does a body having potential energy is transformed into kinetic energy? Explain its mechanism.
3. How and why light, heat and sound are produced when a stone hits a surface?
4. Explain four types of sounds along with their necessary media.

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CHAPTER 14

Dark Matter and Dark Energy

In previous chapters, we have discussed the material that obstructs various combination processes. In this chapter, we will discuss that matter in detail.

14.1 Features of *Asura Tattva* (Dark Matter/Energy)

In this cosmos, along with five *Mahābhūta*, a type of material is generated in large quantities, which largely remains latent and has forces like repulsion and projection in dominance. This material is cumulatively known as *Asura Tattva* in *Vaidic* Physics. Even though it contains projectile or repulsive force, it also contains a slight attractive force. This attractive force is towards itself only means between the entities of *Asura tattva*. Otherwise, the material would have never existed and would have disintegrated and destroyed completely.

Asura Ūrjā tries to obstruct the synthesis of two particles or two celestial bodies, but its attempt fails due to the attack of visible energy. This subtle energy helps maintain distance among the particles and celestial bodies during their mutual synthesis. If that had not been the case, the entire cosmos would have densely collapsed to the least volume. Some other attributes of this material are as follows-

1. Visible and invisible, both types of materials are formed from one material cause (*Upādāna* substance).
2. The *Asura Tattva* is comprised of darkness and is formed from *Manas Tattva* and *Vāk Tattva*.
3. *Asura Tattva* has an excess of *Manas Tattva*, but inside that *Manas Tattva*, there are lesser *'Om' Raśmi*s when compared to *Deva Tattva* or visible matter. Hence it is lesser illuminated than *Deva Tattva*.
4. In all activities of this cosmos, the repulsive and projectile forces

compulsorily act together with attractive and repulsive forces. At some places, these oppose each other, while at some other places, these combine to play a role in the creation of this cosmos. The creation of this cosmos is undoubtedly not possible only with attractive or repulsive forces.

In this cosmos, the most powerful attractive force cannot combine two or more objects (celestial bodies, particles or *Raśmi*s etc.) completely; even they cannot touch each other, and there is always a space between them. Simultaneously, the process of combination, separation, synthesis and dissociation keeps occurring everywhere in the cosmos. In these actions, *Deva* and *Asura* both types of materials play their role. The *Asura Tattva* maintains a suitable gap between celestial bodies through its repulsive force and helps hold them or keep them stable. Among the two, *Deva* and *Asura Tattva*s, *Deva Tattva* originates first, and *Asura* originates subsequently.

5. This material is in the form of latent *Vāyu*, which can never be in an illuminated state except only in exceptional situations.

6. The *Manas Tattva* having no *'Om' Raśmi*s is also an *Asura Tattva*.

7. In this material, no other *Chanda Raśmi*s are present except *Āsurī Chanda Raśmi*s only *Prāṇa Raśmi*s are present.

8. Only those *Chanda Raśmi*s that are stimulated by and remain combined with *Manas-Tattva* become visible matter and participate in the cosmic activity. On the contrary, those *Chanda Raśmi*s that *Manas Tattva* does not stimulate gets converted into dark energy or matter.

9. In cosmic activity, some essence of few *Chanda Raśmi*s leaks out in *Ākāśa*. Then these essence-less *Raśmi*s generate *Asura Tattva*, or themselves get transformed into *Asura Tattva*.

10. When *Vyāna Raśmi*s are not stimulated and not accompanied by the *Manas Tattva*, then *Prāṇa-Apāna* and *Prāṇa-Udāna Raśmi*s transform into *Asura Raśmi*s.

11. With the beginning of the phase of absolute dissolution, the *Asura Tattva* gets stronger continuously, and the *Raśmi*s destructing or controlling it becomes weaker or destroyed. Due to this, the destruction of various celestial bodies and substances starts. In the explosion of a supernova, the

Asura tattva plays its essential role.

12. Those *Chanda Raśmi*s with which *Anuṣṭup Chanda Raśmi*s do not combine, get converted into *Asura Raśmi*s.

13. Those *Chanda Raśmi*s with which *Prāṇa Raśmi*s exist in mutually scattered form, such *Raśmi*s produce *Deva Tattva* and those *Chanda Raśmi*s with which *Prāṇa* is very closely bound, those convert into *Āsurī Chanda Raśmi*s to produce *Asura Tattva* or dark matter.

14. When there is no mutual harmony between *Prāṇa* and *Apāna Tattva*, during that period, various *Prāṇa Raśmi*s are unable to combine with *Chanda Raśmi*s, this results in *Prāṇa Raśmi*s getting converted into subtle *Asura Raśmi*s.

15. There exists a special type of explosive and repulsive current in *Asura Tattva* too. Its stream flows everywhere all the time in this cosmos.

16. Those *Chanda Raśmi*s that are unable to combine with their holding *Chanda Raśmi*s titled *Dhāyyā* and those *Prāṇa Raśmi*s that are unable to pair with *Marut Raśmi*s, give birth to *Āsurī Tattva*.

It is evident from the statements that apart from the material that makes this cosmos, there is one other material that is invisible and latent. The visible matter is the main reason for creating various celestial bodies, while invisible material cannot create any celestial body. Despite this, in the creation of the visible cosmos, invisible material plays an important role.

In *Vaidic* Physics, the visible material is known as *Deva*, and the invisible material is known as *Asura Tattva*. Modern science also acknowledges two types of matter, which terms as Dark Matter and Dark Energy. However, modern science has not described this dark matter properly, and neither has proved nor clarified its existence and functioning.[8]

In this cosmos, modern science considers 4.6% visible matter and visible energy, 24% dark matter and 71.4% dark energy.[9] In the context of the origin

[8] ... But where's dark energy coming from? Some believe that it's produced from collisions between quantum particles, but no-one knows for sure. [Source: Top 10 Unsolved Mysteries of the Strange Cosmos, https://stfc.ukri.org/]

[9] https://wmap.gsfc.nasa.gov/universe/uni_matter.html

and properties of dark energy, modern science is itself in darkness.

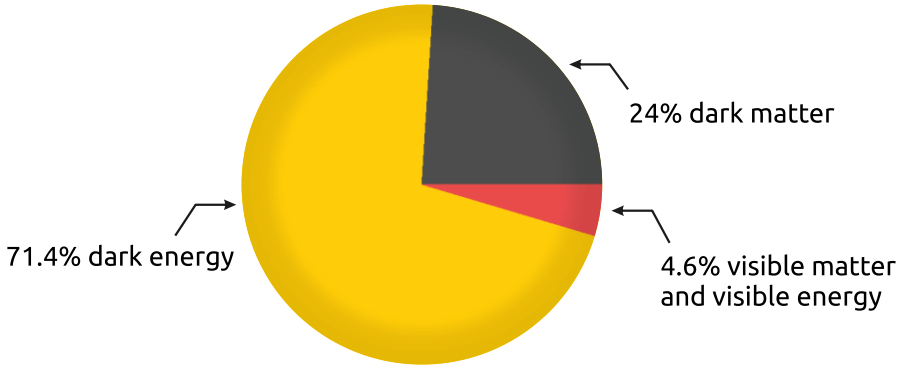

Figure 14.1 Ratio of matters in the cosmos

14.2 Material similar to Dark Matter

Here, it seems that four types of *Asura Tattva*, as described in 14.3, acquire particle form. There is the least amount of attractive force between these particles. It is somewhat similar to the dark matter of modern science. In these, *Chanda Raśmi*s show the least attraction towards the visible matter (*Deva Tattva*), possessing strong bonds, because *Raśmi*s of *Asura Tattva* themselves possess weak bonding. Even then, due to their combination with *Prāṇa Raśmi*s, these produce particles by becoming dense. However, these particles are not so dense as the particles of visible matter. Due to this reason, these are unable to become part of the cosmos directly.

Even if this material does not get attracted by visible matter, there is a negligible mutual attraction within itself; else, the entire *Asura Tattva* would have scattered, and it could not have functioned. Today it is being said that dark matter helps in holding the galaxies, but this holding property is not possible if they had no mutual attraction among the particles. These materials are difficult to identify as they are less dense because they are formed from weak bonded *Raśmi*s.

Modern science is researching dark matter. By understanding the properties of *Asura Tattva* as described by us, they will definitely get help in their research. It is not necessary that all materials of the cosmos can be known. Trying to make science experimental everywhere and bound to that limit only is to make real

science narrow. Theoretical physics can be sufficiently expanded by logic, reasoning etc. too. However, this does not mean that experiments, observations, and examinations should be excluded or discarded, but it is also necessary to think beyond these limits.

14.3 Classification of *Asura Tattva*

Asura Tattva can be classified as below. Such *Chanda Raśmi*s-

1. Which are unable to get stimulated by *Manas Tattva*, and when they combine with *Prāṇa Raśmi*s, they produce *Asura Tattva*.
2. Some essence of whose has seeped into *Ākāśa*, and when they combine with *Prāṇa Raśmi*s, then they produce *Asura Tattva*.
3. Which are devoid of *Chanda Raśmi*s named as '*Dhāyyā*' or *Anuṣṭup Chanda Raśmi*s, they combine with *Prāṇa Raśmi*s, to produce *Asura Tattva*.
4. Which are combined with *Prāṇa Raśmi*s in an unorganized manner, they too produce *Asura Tattva*.

Here we have considered the four categories of *Asura Tattva* as described above in *Vaidic* Science, equivalent to the dark matter of modern science. While four categories of *Vaidic Asura Tattva* have been presented, we are not aware of any clear categorization of the dark matter as described by modern science. However, they do consider hot and cold two types of dark matter.

The first category of *Asura Tattva* is very weak, as it is not stimulated by *Mana* and *Vāk Tattva* at all.

Our fourth category of *Asura Tattva*, in which *Chanda Raśmi*s combine with unorganized *Prāṇa Raśmi*s, is the fiercest, as disorganized *Prāṇa Raśmi*s are unable to control *Chanda Raśmi*s. The remaining two *Asura Tattva* (2 and 3) become weak and pervade the entire cosmos. They may play a role in holding various celestial bodies by influencing them due to their mass.

In this cosmos, this fierce and non-illuminated *Asura Tattva* is also found in the following forms-

1. *Atriṇaḥ* - It is such a type of material that eats up synthesizing particles.

2. *Rakṣāṁsi* - This material is fierce, and synthesizing particles are to be protected from it, else the synthesis process will halt.

3. *Pāpmā* - is a material that attacks the moving particle and deflects them from the synthesis process, and they are deflected in the opposite direction. Such material likes to distract or destroy the *Soma Tattva*, electrons or photons by repeatedly striking on them.

4. *Mayu* (*Kiṁpuruṣa*) - This material has projectile capabilities and is pervasive. It also produces subtle sounds. In our view, it is the primary and most subtle *Asura Tattva* (fierce non-illuminated obstructive material).

5. *Kilbiṣa* - These are those obstructive materials that are known as *Asura Tattva*. These *Asura Tattva* block synthesis of any particle.

6. *Dviṣantam* - Such particles repel *Soma Tattva* and keep them away.

7. *Bhrātṛvya* - It is a disorder of *Agni* and *Vāyu* that abducts other particles and destroys them.

8. *Vṛtra* - This *Asura Tattva* is of cloud form, a form of latent *Vāyu*. Whenever the synthesis of particles is about to happen, this envelope of subtle *Vāyu* or *Megha* (cloud) named *Vṛtra* obstructs it. At the macro-level, it has the capacity to surround all celestial bodies.

9. Amitra - These are such *Raśmi*s that possess no or negligible synthesis power. Any other *Raśmi* which comes in contact with these too loses synthesis power.

10. Dasyu - These are those *Raśmi*s that are powerful and attract the combining particles towards themselves, thereby preventing the synthesis.

11. Sapatna - It is an intermediate form of *Asura Tattva* that obstructs the synthesis of two particles.

14.4 *Āsurī Ūrjā* (so-called dark energy)

After *Vaidic Asura Tattva*, let us discuss *Āsurī Ūrjā*.

1. The *Prāṇa-Apāna* or *Prāṇodāna Raśmi*s, which combine with *Vyāna*

Prāṇa without combining properly with *Manas Tattva*, then those *Prāṇa-Apāna* or *Prāṇa-Udāna Raśmi*s give rise to subtle *Asura Raśmi*s.

2. Such *Prāṇa Raśmi*s, which are unable to combine with *Chanda* or *Marut Raśmi*s, also give rise to *Asura Raśmi*s.

The *Asura Tattva*, as mentioned earlier, is in the form of *Āsurī* energy. Of these, first energy is formed from *Mana* in combination with uncontrolled *Vyāna* along with *Prāṇa-Apāna* or *Prāṇa-Udāna*, while another energy is in the form of *Prāṇa Raśmi*s without *Chanda Raśmi*s. Both types of energy are a form of latent energy. *Vaidic* dark energy is similar to what modern science calls dark energy, to the extent that both exhibit repulsive properties. The reason for this is that it only has *Prāṇa Raśmi*s and does not contain *Chanda Raśmi*s. Modern science is largely unfamiliar with the properties of dark energy, and it also does not know why the effect of dark energy only repulsive is? Our *Vaidic* Science spots sufficient and clear light on it.

14.5 Cause of repulsion between two particles

When an atom or elementary particle or molecule comes very close to each other, then despite the attraction, they stop at a specific distance from each other and start repelling each other.

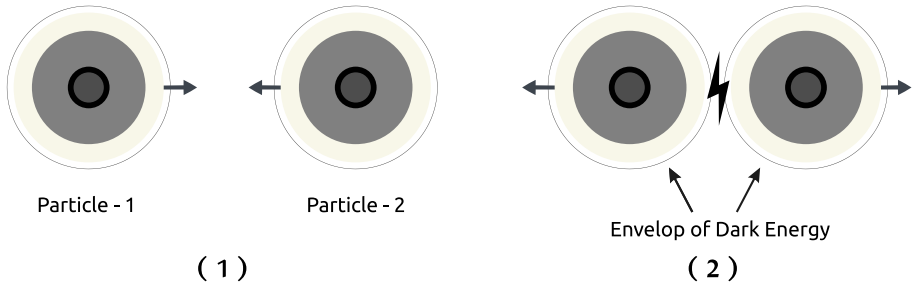

Figure 14.2 Repulsion between two particles by *Asura Tattva*

Two particles can never touch each other. The reason for it is that every particle is always surrounded by a subtle envelope of *Āsurī Ūrjā* (dark energy). It is this envelop that does not allow a particle to combine with another particle completely. The reduction in the gap is due to the lessening of the envelope. Combined particles also have some space in between. Modern science too acknowledges that if the gap becomes lesser than a certain distance (R_0),

repulsive force becomes active between two atoms, but they are unaware of its causes.

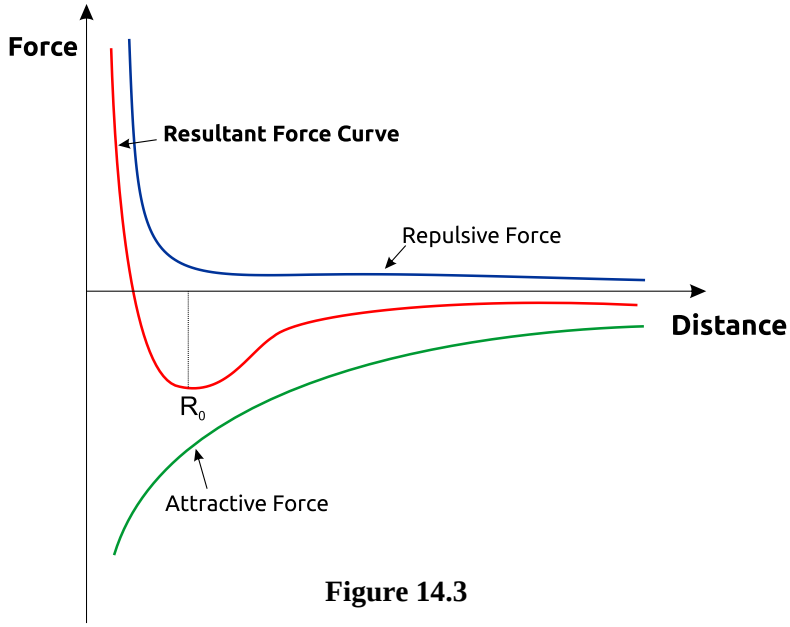

Figure 14.3

14.6 Violation of relativity for a short period

When high energy electromagnetic radiations strike dark energy, at that time, their velocity increases suddenly, and there is no higher velocity of electromagnetic waves anywhere else than this. Here, it seems that the theory of relativity is violated, in this situation, the electromagnetic radiations breach their widely accepted velocity of 3×10^8 kilometre per second in a vacuum and attain the highest velocity. This velocity is not seen anywhere else. It is to be noted that this maximum velocity is for electromagnetic radiations and not for *Raśmi*s like *Prāṇa* etc. As we have earlier mentioned that the maximum velocity in the cosmos is of *Dhanañjaya Raśmi,* which cannot be breached.

While striking dark energy, various quanta project powerful *Marut Raśmi*s from their rear portion. The dark energy can be controlled or destroyed by this projection. Due to the rapid projection of these *Marut Raśmi*s, the velocity of quanta further increases by recoiling in the opposite direction. Here the violation of relativity is not permanent but for a very brief period.

You learnt in this Chapter

- ✓ Such material that usually remains latent and has the dominance of repulsive and projectile forces is called *Asura Tattva*.
- ✓ *Asura Tattva*'s atoms necessarily have attractive forces among them.
- ✓ Visible and invisible, both types of material are produced only from one causal material.
- ✓ *Asura Tattva* has an excess of *Manas Tattva*, but inside that *Manas Tattva*, there are lesser *'Om' Raśmi*s when compared to *Deva Tattva*. Hence it is lesser illuminated than *Deva Tattva*.
- ✓ *Deva* and *Asura*, both types of materials, play their part in the actions of combination, separation, synthesis and dissociation processes in this cosmos.
- ✓ The *Asura Tattva* maintains a suitable gap between celestial bodies through its repulsive force and also helps to hold them or keeps them stable.
- ✓ Among the two, *Deva* and *Asura Tattva*s, *Deva* originates first, and *Asura* originates subsequently.
- ✓ The *Manas Tattva* having no *'Om' Raśmi*s is also *an Asura Tattva*.
- ✓ *Asura Tattva* is made of *Āsurī Chanda Raśmi*s.
- ✓ Those *Chanda Raśmi*s, which *Mana* does not stimulate, get converted into latent energy or matter.
- ✓ In the explosion of supernova etc., the *Asura Tattva* compulsorily plays its role.
- ✓ In *Vaidic* Physics, the visible matter is called *Deva*, and the invisible matter is called *Asura*.
- ✓ Energy formed from *Mana* in combination with uncontrolled *Vyāna* along with *Prāṇa-Apāna* or *Prāṇa-Udāna* and energy formed from *Prāṇa Raśmi*s without *Chanda Raśmi*s, these both types of energy in the form of latent energy.
- ✓ When high energy electromagnetic radiations strike dark energy, at that

time, their velocity increases suddenly, and nowhere else do these electromagnetic radiations have a velocity higher than this.

✓ This maximum velocity is for electromagnetic radiations and not for *Raśmi*s like *Prāṇa* etc. So, the violation of relativity is not permanent but for a very short period.

EXERCISES

1. From whom the visible and dark matters in this cosmos are produced?
2. How do the *Asura Ūrjā* and dark energy both originate? What is the difference in the properties of these two?
3. Which type of energy is more active at the beginning of the phase of absolute dissolution, and why?
4. Describe the origin and features of the *Asura Tattva* of *Vaidic* Physics which is similar to dark matter.
5. Explain the process of origin of *Asura Tattva* and *Asura Ūrjā*?
6. How *Asura Tattva* becomes the reason for repulsion between two particles?
7. At which conditions the velocity of light is higher than usual in this cosmos?

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CHAPTER 15

Mass and its Cause

We experience some weight in every object of this world. Also, we observe that objects resist changing their state. In both cases, the cause of this tendency is its attribute named 'Mass'. Let us understand about the mass.

15.1 Notion of 'Mass' in modern science

Mass is that fundamental property of an object which resists the acceleration of that object. Presently, the definition of mass and its origin are not clear. Higgs Bosons are considered to be the cause of the mass or weight of the particles. In 1961, American physicist Peter Higgs observed that there are various types of particles and quanta in this cosmos. Of these, some have mass, and some do not. Furthermore, those that have mass do not have the same amount. Due to this reason, he thought that there might be an extended field in this cosmos, which causes the mass to exist in particles. He named the quanta of that hypothetical field 'Higgs Boson'.

In 2012 scientists claimed to have discovered the Higgs Boson through experiments at the LHC (Large Hadron Collider) in the world's largest physics laboratory CERN (European Council for Nuclear Research). Scientists consider its mass to be 133 times of mass of the proton. So now the question is, if Higgs Boson is the reason for the mass of all the particles, then what is the origin of the Mass of Higgs Boson itself?

Modern scientists present many hypotheses to prove Higgs Boson. They say that the cause of mass in all particles is Higgs field and Higgs Boson, but the cause for the mass of Higgs Boson is Higgs field only.

Now, on this, if we question that how is this Higgs field different from Higgs Boson? When a particle can get mass from the Higgs field, why is Higgs Boson required for the mass of other particles? Again, what is the source of the Higgs

field? Modern physics scientists do not have any answer to these.

Regarding Higgs Boson, modern science is of the following view-

> *"Higgs field must exist everywhere in space. The Higgs field has an additional significance: by interacting with it, particles acquire their characteristics masses. The stronger the interaction, the greater is the mass. We can think of Higgs field as exerting a kind of viscous drag on the particles that move through it; the drag appears as inertia, the defining property of mass."*

[Page No. 496, Arthur Beiser, Concept of Modern Physics.]

Means: just like viscous force is applicable on a solid object when it travels through a liquid. Similarly, the Higgs field applies force on a particle. Now here is a question that when a solid object passes through the liquid, then viscous force is applied because both the solid and the liquid have mass properties. If either of the two does not have mass, then viscous force will not act. So at the time of origin of particles like electrons, when there was no mass, how can Higgs field produce viscous force (inertia or mass) in them?

The second question is, if the Higgs Boson, whose mass is 133 times that of the proton, can get mass from the Higgs field without any mediator particle, then why can't the mass originate directly into proton and neutron without the help of Higgs Boson which is 133rd part of it? Moreover, why can an electron that is the 245,421st part of Higgs Boson not get mass directly from the Higgs field? Of course, the boson always exists as a mediator particle between two particles, producing a force between them. Like, the photon between charged particles, gluon between quarks, graviton between two objects having mass, etc., but between which two particles does the Higgs Boson act?

Now the third question is like for mass, which is the fundamental property of a matter, there is an assumption that there is a field acting behind it, i.e. Higgs field. For another property of matter like an electrical charge, the same logic can be applied here that it is also due to some other field. The electromagnetic field is itself due to electrical charge, then which is the field responsible for the electrical charge? When mass originates due to field, why can't electrical charge be considered originated from a field?

15.2 *Vaidic* aspect of mass

In reality, the Higgs field is not the reason for the origin of mass, but the reason is as follows-

A subtle electric current (*Vidyut*) named as '*Vaikunṭha Indra*', which originates by a specific combination of *Prāṇa* and *Apāna Raśmi*s, combines with *Prāṇa*, *Vyāna* and *Dhanañjaya Raśmi*s; here *Triṣṭup Chanda* is also present, then the property of mass is produced. This current is specifically very slow/weak. In this combination, *Prāṇa* is in excess when compared with *Apāna*. The attractive force of *Prāṇa Tattva* dominates the repulsion of *Apāna* and makes it insignificant by combining with *Dhanañjaya Raśmi*s which are mixed with *Vyāna Raśmi*s.

Due to this type of combination of *Raśmi*s, any substance will have only attraction and opposes changes in any state of rest or motion. Modern science calls this resistive property only as of the mass in the form of inertia. Its feature and mechanism are-

More of *Prāṇa* as compared to *Apāna* along with *Vyāna*, these three *Raśmi*s are together held by *Triṣṭup Raśmi*s from three sides. Next, a web of *Sūtrātmā Vāyu* encircles them from all sides. This way, it forms a lump. This can be either a particle or quanta. When this lump moves then there is a resistance by subtle *Raśmi*s present in *Ākāśa*. Although the *Raśmi*s of *Ākāśa Tattva* can easily travel across the lump of *Prāṇa* and *Chanda* etc., due to the unique web of *Sūtrātmā* and *Triṣṭup*, they produce resistance, and this resistance is called as 'Mass'. So that lump, in which more *Raśmi*s are condensed and tangled, will have more mass. Modern science does not understand such subtle mechanisms even a bit.

The property of inertia and mass in an object is produced by the mixture of pervading electricity named as *Vaikunṭha Indra* and *Prāṇa Tattva* along with the combination of *Dhanañjaya* and *Vyāna*. Due to *Vidyut Tattva*, all objects of the cosmos are bound to each other, but due to the presence of *Apāna* in *Vidyut*, they remain distinct in a specific gap. This way, *Vidyut Tattva* and *Apāna Prāṇa* work mutually in coordination. This *Vidyut Tattva* controls or destroys the repulsive force of dark energy. This prevents the formation of deformed substances by preventing undesirable forces from acting between materials. It attracts various particles and *Raśmi*s that are attacked by dark energy, combines with them, and appends them to the cosmic process.

15.3 The theory of conservation of energy and mass

In the cosmos, various electromagnetic radiations have close relations with various types of *Vāyu Tattva* or *Prāṇa* etc. *Raśmi*s. *Vāyu* and *Prāṇa* etc. *Raśmi*s, when compressed, produce electromagnetic waves or energy. Modern science cannot experience the properties of *Vāyu* and *Prāṇa* etc. *Raśmi*s with their present techniques. Wherever it looks like a violation of conservation of mass or energy, it should be considered a result of both converting into *Prāṇa Tattva*. Vacuum energy is a form of *Vāyu Tattva* only. When particles and quanta are formed by their compression, then the principle of conservation of mass and energy seems to be violated. In reality, *Vāyu Tattva* and energy are basically one as they are inter-convertible and are formed from one material cause and finally merged in it. Generally, where there is *Vāyu*, there is energy too. Additionally, there is some energy in every type of particle and wave in this cosmos, which means there is no energyless material in this cosmos. Some materials are formed as substances etc. by the transformation of energy, while some materials (*Vāyu* etc.) are transformed into a form of energy.

You learnt in this Chapter

- ✓ Mass is that fundamental property of an object which resists the acceleration of that object.
- ✓ The subtlest electricity named as '*Vaikunṭha Indra*', originates from a specific combination of *Prāṇa* and *Apāna Raśmi*s.
- ✓ The *Raśmi*s of *Ākāśa Tattva* are capable of travelling quickly across the lump of *Prāṇa* and *Chanda* etc., but due to the unique web of *Sūtrātmā* and *Triṣṭup*, they produce resistance, and this resistance is called as 'Mass'.
- ✓ The particle, formed by *Triṣṭup Chanda* and *Sūtrātmā Vāyu* binding *Apāna*, *Prāṇa* and *Vyāna Raśmi*s, when moves, then subtle *Prāṇa* etc. *Raśmi*s present in *Ākāśa* resists the motion of the particle.
- ✓ The more *Raśmi*s and the amount in which the lump is condensed, the greater is the mass of that particle.

- ✓ The attribute of inertia and mass in an object is produced by the mixture of pervading electricity named as *Vaikuṇṭha Indra* and *Prāṇa Tattva* along with the combination of *Dhanañjaya* and *Vyāna*.
- ✓ Due to *Vidyut Tattva*, all substances of the cosmos are bound to each other, but due to the presence of *Apāna* in *Vidyut*, they maintain a specific gap.
- ✓ *Vāyu* and *Prāṇa* etc., *Raśmi*s, when compressed, produce electromagnetic waves or energy.
- ✓ Wherever there looks like a violation of the conservation of mass or energy, it should be considered that it is due to the conversion of mass and energy into *Prāṇa Tattva*.
- ✓ *Vāyu Tattva* and energy are one only as they are inter-convertible and are formed from one material cause and finally merged in it.

EXERCISES

1. What is mass? Try to explain it from the concept of *Vaidic* and modern physics.
2. With reasoning, critically analyze the Higgs Boson.
3. According to *Vaidic* Physics, how does mass originates?
4. Explain the violation of the principle of conservation of mass and energy, from the *Vaidic* Physics point of view.

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CHAPTER 16

Quanta

We are aware of the importance of emission and absorption of energy by a particle in this cosmos. This process is behind the phenomena like stimulated emission and spontaneous emission, etc., in this cosmos. This process is also responsible for radiation to come from the core of the sun to the surface. We know that how this process happens. However, why does it happen? What is its working mechanism? Modern science does not answer these questions. Let us try to understand them from the *Vaidic* Science perspective. In this context, it is essential first to understand the dual nature of light.

16.1 Dual nature of light

Let us understand the nature of light. Some experiments exhibit the wave nature of light, while some others exhibit the particle nature of light. Modern science considers the dual nature of light, which means while travelling, the light exhibits wave nature, and while absorption and emission, it acquires particle form, which is called the photon. In *Vaidic* Science, too, light has a dual nature, but why is it so? Unfortunately, modern science is silent on it.

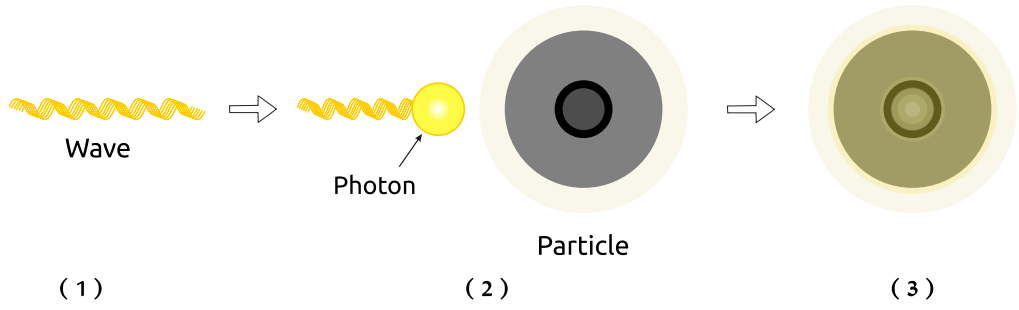

Figure 16.1

Photons, if we talk from *the Vaidic* Science perspective, travel in the form of a wave. At that time, they are spread, and their shape, though unpredictable, is cylindrical. As soon as they are to be absorbed by any particle, they immediately get condensed and absorbed and finally spread in the particle. This way, photons acquire particle form only during absorption and emission. According to *Vaidic Raśmi* theory, various *Chanda Raśmi*s originate in *Manas Tattva* to execute such activities. Thus, *Chanda Raśmi*s play a vital role in the entire cosmos's subtle and even subtler activities. Here the action of condensing the photons is done by below *Raśmi*-

agnīṣomā haviṣḥ prasthitasya vītaṁ haryataṁ vṛṣaṇā juṣethām.
suśarmāṇā svavasā hi bhūtamathā dhattaṁ yajamānāya śaṁ yoḥ..
(*Ṛgveda* 1.93.7)

Usually, in heat radiations, which means in absorption and emission of a photon from a particle, thirteen *Chanda Raśmi*s act as an actuator. However, in giving particle form to energy, *Triṣṭup Chanda Raśmi* plays an important role. Assume if this *Raśmi* suddenly ends in the entire cosmos, then what will happen? Just like darkness spreads when the light switch is turned off. Similarly, darkness will spread everywhere. In less than a second, the entire world will get destroyed.

16.2 Two envelops around the particles

In the combination and separation of photons and electrons, their outer cover is never destroyed completely, but it remains with them until their lifetime. After that, however, this cover becomes weaker.

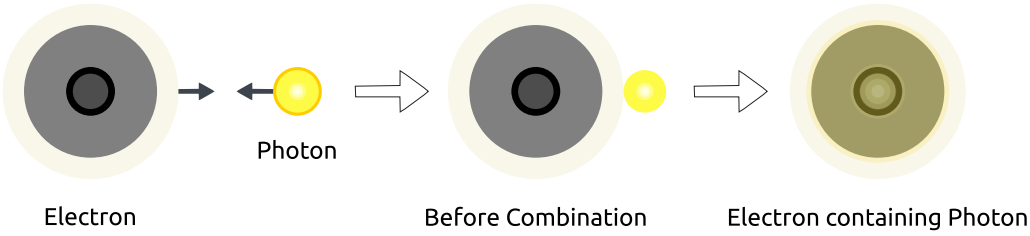

Figure 16.2

There are two envelopes around them, of which one cover ensures its velocity and glow while the other subtle cover plays a specific role in receiving and shunning the outer cover. This cover preserves the identity of the particle

too. If this cover also gets destroyed during the combination, then the same particle will not be able to form at the time of separation. It is to be noted here that while coming out of electron, the subtle inner cover regenerates the weakened outer cover of the photon, due to which that photon regains the glow, force and velocity.

When electromagnetic waves combine with various electrons (*Somya Kaṇa*), at that time, the envelope of various *Prāṇa Raśmi*s over the electrons, the penetration of those covers of electrons is a necessary step for the emission and absorption of energy. If this penetration does not happen, then there will be no emission and absorption of energy. Due to the absence of emission and absorption, the transmission and generation of energy will not occur. Then there is neither possibility of transformation in energy, nor refraction and nor diffusion of energy. In this situation, darkness will prevail everywhere.

Electromagnetic radiations are able to penetrate these covers due to a *Jagatī Chanda Raśmi*. Only after the penetration, the energy can pervade the electrons. The subtle electricity present in the electromagnetic radiations can only penetrate this way, which is hyperactive due to this *Raśmi*.

16.3 The mechanism of the interaction of photon and electron

When a photon strikes an atom, and the energy of the photon is equal to the difference in the two energy levels of electron, then the electron in the lower energy level absorbs the photon and reaches into a higher state, and after a brief period, reverts into low energy level by releasing the photons.

Figure 16.3

For example, in spontaneous emission, when an electron is excited from a

lower to higher energy level, it is unlikely to stay that way forever. An electron in an excited state may decay to the lower energy state, which is not occupied. When such an electron decays without external influence, emitted a photon and reverts back into the lower energy level. Why is it so? Modern science is unaware of it. Let us understand it briefly from the *Vaidic* Science perspective.

When photon and electrons combine, then three *Raśmi*s play an important role. Of these, the first is

agne vīhi haviṣā yakṣi devāntsvadhvarā kṛṇuhi jātavedaḥ

(*Ṛgveda* 7.17.3)

Due to this, the photon pervades into the particle and provides motion to it. Next, second *Chanda Raśmi* is produced-

yadusriyāsvāhutaṁ ghṛtaṁ payoyaṁ
sa vāmaśvinā bhāga ā gatam.
mādhvī dhartārā vidathasya satpatī
taptaṁ gharmaṁ pibataṁ rocane divaḥ..

(*Atharvaveda* 7.73.4)

Due to the effect of this, *Prāṇa-Apāna* is stimulated, which help electron absorb a photon. And the third is-

asya pibatamaśvinā yuvaṁ madasya cāruṇaḥ.
madhvo rātasya dhiṣṇyā..

(*Ṛgveda* 8.5.14)

Due to the effect of this, *Vāyu-Vidyut* or vacuum energy becomes intense. It absorbs the *Prāṇa*s emitted from photon and electron, due to which these two *Chanda Raśmi*s together cover the combined form of both particles. As a result, the aforementioned third *Chanda Raśmi*, by which synthesis of the two particles happens, immediately dissociates. While dissociating, the aforesaid '*agne vīhi…' Chanda Raśmi* gets generated and separates the two particles from north and south directions.

When a photon falls on an electron, it enters either from the north or south direction only, and when it is emitted, it is released from the same direction. The law of direction is due to the first *Chanda Raśmi*. The remaining two *Raśmi*s are used in complete absorption of a photon by an electron. This causes the photon's

energy to pervade into an electron which is itself a group of subtle *Raśmi*s. Furthermore, when the photon is rereleased from the electron, then the energy gets collected by the effect of these two *Chanda Raśmi*s. Thus, with the help of the first *Raśmi*, it condenses and moves out from the same direction of the electron.

When an electron and a photon mutually combine, then that photon projects subtle *Marut Raśmi*s over particle like electron and also subtle *Prāṇa Raśmi*s hover above subtle *Marut Raśmi*s like flies. These keep those *Marut Raśmi*s mutually combined and integrated. These *Marut Raśmi*s control or destroy the obstruction of *Asura Ūrjā* (dark energy) at a subtle level.

These provide various levels of energy to electrons and facilitate mutual reactions among the ions. These *Marut Raśmi*s primarily stimulate the quanta of various energy levels to combine them with particles like electrons and search for such particles. When a photon travels towards a particle with an intent to combine, then as it comes closer, it revolves around it and then combines and pervades, but not by direct and sudden impact. This combination of energy and matter continuously goes on in the cosmos. In the absence of their combination, no cosmic activity can take place. Despite being different, energy and matter are both the same as they are created from one fundamental entity.

Additionally, *Ākāśa Tattva* is also not different from energy and matter and vice-versa. In fact, since these have originated from subtle material like *Prāṇa* and *Chanda* etc. *Raśmi*s, these all are one but diverse. In *Vaidic* Science, all these are called material.

Here, the combination of a particle like an electron with a photon has been discussed. When they mutually combine, then that electron releases a *Nicṛt Anuṣṭup Chanda Raśmi* on the photon, and that photon releases a type of *Bṛhatī Chanda Raśmi* on electron and gets absorbed in it. This *Chanda Raśmi* surrounds the photon together with the electron from all sides and pervades. In the emission of a photon from an electron, a similar process occurs, which means there is an exchange of *Chanda Raśmi*s. When a photon gets combined with an electron, there is a glow due to *Anuṣṭup Chanda Raśmi*.

Any quanta will not glow either alone or as a group of waves until it interacts with a particle of material. This way, an electron having photon or an excited electron gets emitted from an atom and gets combined with another ion or tries

to do the same. In the process of their separation, the particles (electrons etc.) release *Nicṛt Anuṣṭup* and quanta release *Bṛhatī Chanda Raśmi* as mentioned earlier. When these two types of particles associate or dissociate, electrons etc. particles themselves vibrate and induce vibration in quanta too, which means both vibrate. When a quanta associates with a particle, it gets absorbed in it, the same as the rainwater is absorbed in the earth. In such activities, inter transfer of various types of *Prāṇa* and *Marut Raśmi*s takes place among them. These *Raśmi*s are present in particle and quanta.

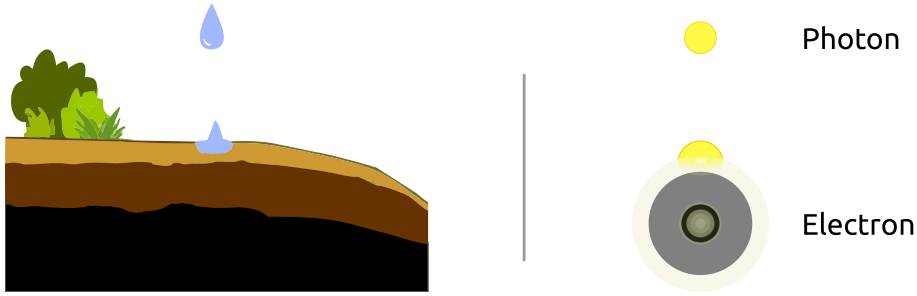

Figure 16.4 Absorption of photon by electron

When a photon is released from an electron, it comes out shrinking as if a raindrop is falling from clouds. However, at the time of exit, the scattered photon begins a distant journey. Similarly, when it again falls on a particle, it first converts into a drop-like shape and falls on the particle and then immediately leaves that shape to pervade into the particle.

In this cosmos, no material can ever accomplish any process of association and dissociation without energy. Moreover, in the absence of energy, no particle can be detected by any technology. In these processes, only the combination of particles with similar valency is permanent, not of unequal ones. Due to this reason, such combinations happen based on priority.

16.4 The motion of various particles and quanta

There is an intense glowing envelope on photons, electrons etc., which not only protects the particles' properties and quantity, but those particles also move by revolving around each other or rotating and vibrating on its axis. While this envelope is of specific *Chanda Raśmi*, its root cause is *Sūtrātmā Vāyu*. This covering is all around the particles. This cover protects the particle from not only

external obstructive *Raśmi*s but also the *Prāṇa* etc. subtle *Raśmi*s are prevented from escaping out. In this external covering, *Vidyut- Vāyu* is also included, due to which they vibrate and move ahead. Due to this reason, all particles vibrate and move continuously even inside the substance, which is compact at one place, i.e. solid and liquid etc., which can be called 'vibrating motion' in modern science.

When a photon is emitted from an electron or nucleus, it vibrates very fast in an uncontrollable manner. What will be its direction and velocity? It is uncertain. At that time, some *Gāyatrī Raśmi*s combine with it and together with *Dhanañjaya Prāṇa* it associates with *Ākāśa Tattva* and gives it high velocity (300,000 km per second) immediately. Post this, that photon embarks on a far or an infinite journey in the cosmos.

The point to be acknowledged here is that when a photon combines with the electron, etc., it assimilates its energy and speed with the energy and speed of the electron. When that electron accepts a high-speed photon, at that time too, *Gāyatrī Raśmi*s as mentioned earlier, combines with it and associates it with the *Ākāśa Tattva* present around that electron, causing that photon to come closer and later its velocity and direction becomes irregular. Next, it is absorbed by that electron.

16.5 Structure of Photon

All types of subtle particles, photons or *Raśmi*s of force etc. are capable of performing their work by associating with their subtle powers, i.e. *Bhūḥ*, *Bhuvaḥ*, *Svaḥ* etc. *Daivī Gāyatrī Chanda*s and can keep off the obstructive *Raśmi*s or so-called dark energy. Various types of photons are also associated with seven types of *Gāyatrī* etc. *Chanda Raśmi*s, *Mana* and *Vāk Tattva*, *Mūla Prakṛti* (fundamental material) and *Prāṇa* and *Apāna* etc. primary *Prāṇa*s. Various *Marut Raśmi*s help to provide shape to the bigger *Chanda Raśmi*s, photons, electrons etc. or mediator particles. Photons travel in *Ākāśa Tattva* (space)

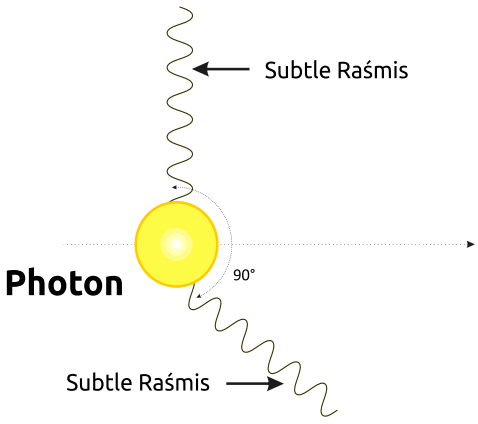

Figure 16.5

with *Dhanañjaya Prāṇa*. A photon is a combined form of various *Raśmi*s of *Ākāśa* and *Vāyu Tattva*. From subtle *Prāṇa* to *Chanda Raśmi*s, all *Tattva* are present in it. Generally, it is not destroyed until the life of the cosmos. In the direction of the motion, it looks like as shown in fig.16.5.

There are two streams of special subtle *Raśmi*s emitted at a right angle, and in those directions, there are specific *Prāṇa* etc. *Raśmi*s are hidden in latent form in that photon. These two streams control the velocity of any photon. There is a core of the photon comprised of subtle *Prāṇa*s to connect those two streams, and the rotating centre controls the two streams.

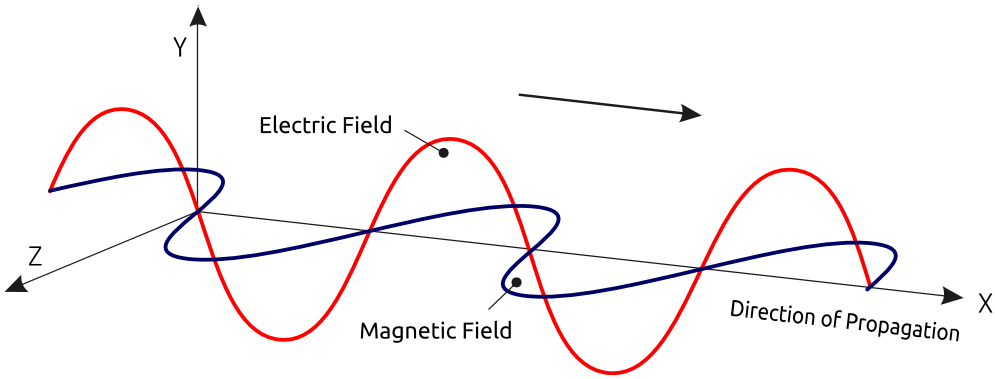

Figure 16.6

Modern science acknowledges that an electromagnetic wave has an electric field and a magnetic field on both sides and they move mutually perpendicular changing in the direction of electromagnetic wave. These two fields do match the *Vaidic Raśmi* Theory, but why are they in the perpendicular direction? Unfortunately, the answer to this is not available in modern science.

16.6 Compton effect

According to modern science, when high-frequency electromagnetic radiations (i.e. photons) interact with matter, photons lose energy due to the scattering from free electrons and their wavelength increases. This process is known as the Compton effect. So now the question here is: What is the mechanism of a photon transferring energy to an electron? How does it transfer some energy to the electron?

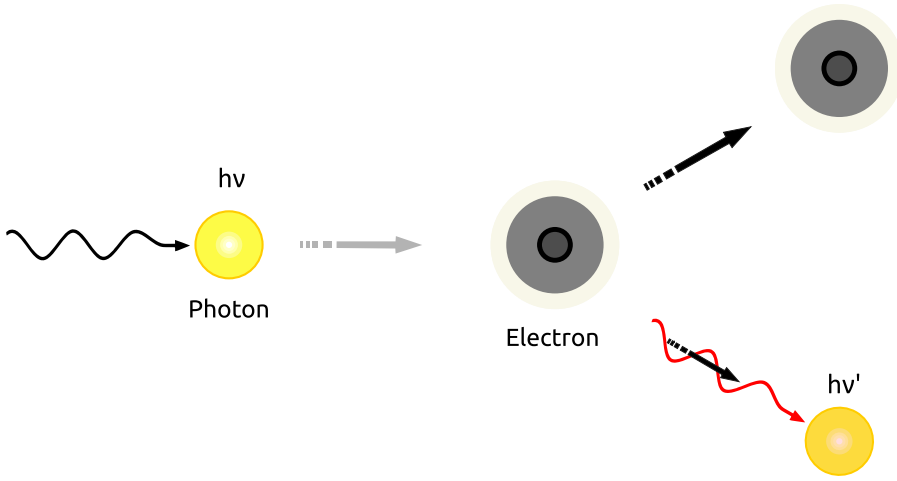

Figure 16.7 Transmission of some subtle *Raśmi*-s from photon to electron

Let us see what *Vaidic* Science says about this. *Vāk Tattva* (*'Om' Raśmi*), present in very subtle form and subtle *Marut Raśmi*s, always stay combined with matter and energy. Photons hold very subtle *Raśmi*s.

When photons hit an electron etc., they project these *Raśmi*s on those particles. As any photon contains 360 types of *Raśmi*s itself, this is why when a photon strikes any other particle, it transfers some energy to it and moves ahead with the remaining energy. The *Prāṇa* and *Chanda Raśmi*s present inside the low energy photon break and convert into relatively weaker *Chanda Raśmi*s. This is the reason for the loss in its energy. Hence, a photon is not a unit of least energy.

When a photon is absorbed by an electron and re-emitted, it keeps a subtle amount of energy with it and emits the rest. This is the reason that the gamma rays emitted from the core of the sun convert into visible, infrared, ultraviolet rays etc. This subtle absorption of the energy is due to a *Jagatī Chanda Raśmi*.

16.7 Photoelectric effect

Maharṣi Aitaraiya Mahīdāsa had written this 7000 years ago in his text and had explained it in detail. Let us understand it in brief-

Triṣṭup Chanda Raśmi ties the energy in the form of a photon. Due to this,

various photons carry a specific quantity of energy; specifically, when photons strike an electron, they can combine with it with a specific quantity of energy and not with continuous energy. This *Chanda Raśmi* moves in the centre of another *Chanda* etc. *Prāṇa*, which associates with electrons, does not obstruct energy's continuous flow in a free state. At the time of absorption and emission, it ties the energy and converts it in the form of a particle (photon).

In 1905 Einstein had proposed the same thing that light travels in the form of distinct bundles of energy. Along with this, as per the photoelectric effect equation of Einstein,

$$hf = hf' + K_{max}$$

When light is incident on metal, if the energy is above *hf*' then electron ejected from the surface of the metal with kinetic energy $K_{max.}$

16.8 Presence of *Sūtrātmā Vāyu* in quanta

When a photon combines with a particle, then the energy of that photon pervades in the entire particle. This way, it spreads itself up to the limits of that particle. However, when the particle is surrounded by *Sūtrātmā Vāyu*, then one part of *Sūtrātmā Vāyu* is within the limits of the particle while three parts are outside at the circumference of the particle. This way, the pervasion of *Sūtrātmā Vāyu* is four times the pervasion of the photon.

16.9 The law of association of particles

In this cosmos, when particles or quanta combine mutually, only two particles or quanta can combine at a time, not more. In this cosmos, many atoms are seen in various molecules; we believe they all cannot combine mutually, but they associate in chains 2, 3, 4... etc. increasing order. This law is followed in the structure of the atoms too. Likewise, when a photon is absorbed or emitted from an electron, only one can be emitted or absorbed. More than one is not possible.

Activity

You may be familiar with the interference phenomenon, try to illustrate this process with *Vaidic Raśmi* Theory.

You learnt in this Chapter

- ✓ According to the *Vaidic* Science perspective, photons are in expanded form when they travel in the form of a wave; when any particle absorbs them, they immediately get condensed and are absorbed and pervade in the particle.
- ✓ Photon acquires ‘particle form’ only during emission and absorption.
- ✓ There are two envelopes around a particle, of which one cover ensures the intensity of its velocity and glow. In contrast, the other subtle cover plays a specific role in receiving and shunning the outer cover.
- ✓ When quanta travel towards a particle with an intent to associate, then as it comes closer, it revolves around it and then combines and pervades, but not by direct and sudden impact.
- ✓ While being different, energy and matter both are the same as they are made of only one root material.
- ✓ There is an intense glowing envelope on various photons, electrons, etc., protecting the particles’ properties and quantity.
- ✓ This envelope is of specific *Chanda Raśmi*. This cover protects the particle from external obstructive *Raśmi*s and prevents the *Prāṇa* etc. subtle *Raśmi*s from escaping out.

- ✓ When a photon combines with an electron, it assimilates its energy and speed with the energy and speed of the electron.
- ✓ Various types of photons are associated with seven types of *Gāyatrī* etc. *Chanda Raśmi*s, *Mana* and *Vāk Tattva*, *Mūla Prakṛti* and *Prāṇa* and *Apāna* etc. primary *Prāṇa*s too.
- ✓ There are two streams of special subtle *Raśmi*s emitted at the right angle from the photon. These two streams control the velocity of the photon.
- ✓ A photon contains 360 types of *Raśmi*s.
- ✓ *Triṣṭup Chanda Raśmi* ties the energy in the form of a photon, due to this photon carry a specific quantity of energy.
- ✓ When particles or quanta combine mutually, only two particles or quanta can combine at a time, not more.

EXERCISES

1. Explain the dual nature of light from modern science and *Vaidic* Science perspective.
2. Describe the working mechanism of the combination of photon and electron.
3. Does any photon acquire maximum speed just after being emitted from an electron or it does so due to any other reason?
4. If there is no envelop around a particle, then what will happen?
5. Explain the structure of a photon with the help of a diagram.
6. Explain the Compton effect from *the Vaidic* Science perspective.
7. What is the law of the combination of particles?
8. Which *Chanda Raśmi* helps in the absorption of energy?
   (a) *Triṣṭup*
   (b) *Anuṣṭup*

(**c**) *Jagatī*
(**d**) *Gāyatrī*

9. Due to which *Raśmi*s quanta have specific energy?
(**a**) *Jagatī*
(**b**) *Bṛhatī*
(**c**) *Triṣṭup*
(**d**) *Gāyatrī*

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CHAPTER 17

Formation of Stars

On a 'new moon' night (*Amāvasyā*), the beauty of twinkling stars looks fantastic. A layman can never imagine that how big these stars are! In fact, many stars are equal to the sun in dimension, some are smaller, and some are much larger. In this vast *Ākāśa*, there are approximately two billion galaxies, and each galaxy contains 2-3 billion stars. Modern scientists have calculated this measurement of the 'visible universe'. In reality, how big is the cosmos, It is not known to anyone and can never know it. How are these stars formed? Scientists have been searching on this for a long and are doing it even today. Until today, they have understood only a part of it.

17.1 Two types of *Loka* (celestial bodies)

In this cosmos, apart from space, there are two types of *Loka*. Of these, first are those which are objects of intense light and heat, whom we call stars. When these stars are being formed, at that time, the intensity of heat and light is relatively less in them. However, with time, nuclear fusion begins in their core, which increases the heat and light a lot. So until they live, they stay in that form only. These stars revolve around the biggest and most powerful star, which is at the centre of the galaxy.

Second are those *Loka*, which are like a fireball in a formative state, but they cool down and transform into planets and satellites with time. There is a high temperature at their core, but that is not intense enough to begin nuclear fusion.

These are planets and tied by gravitational force to the nearest star and revolve around it continuously. However, for some time after their birth, various stars, planets and satellites etc., celestial bodies are unable to revolve in fixed orbits with a fixed velocity around the nearest bigger celestial body. Instead, their velocity and path are uncertain, haphazard and unstable. However, they all always try to acquire fixed orbit and fixed velocity.

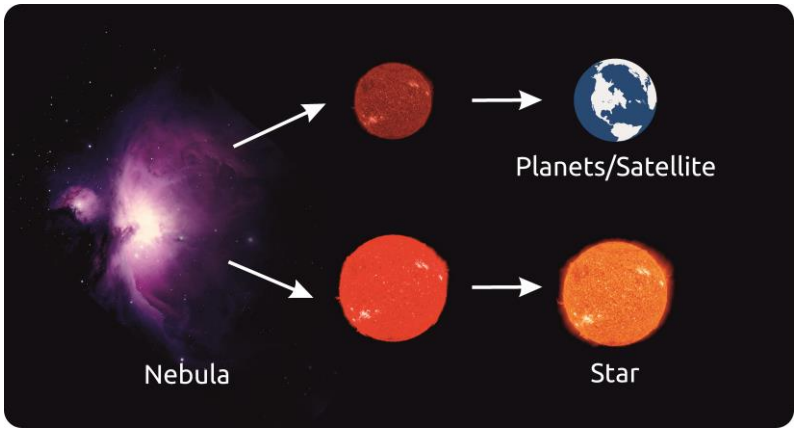

Figure 17.1

17.2 Structure of stars

Stars have five major parts. The names of those five parts are - *Loma, Tvacā, Māṁsa, Asthi* and *Majjā*.

1. *Loma* - *Loma* (hair) of stars, in *Vaidic* Science perspective, are the various *Chanda Raśmi*s only. These flow in the outward direction in the outer areas of stars and produce flames.

2. *Tvacā* - Inside it is the corona and also its base is the envelope of *Chanda Raśmi*s and other *Sūtrātmā Vāyu Prāṇa* etc. *Prāṇa Raśmi*s covering the entire star. This is like the *Tvacā* (skin) of the star. In this part, the *Asura Tattva*, mixed with *Ākāśa Tattva* in a controlled state, is close to these *Chanda* etc. *Raśmi*s. These all combine to make the periphery of the star. Here, the periphery of the star is very hot due to the denseness of *Chanda* and *Prāṇa*.

3. *Māṁsa* - Next is the third part (which continuously slips over the core) of the star. This is like the *Māṁsa* (muscles), which means all the formative matter of the star (the nuclei of hydrogen are present in abundant quantity and accordingly electrons are present in the same proportion but in free form) is available. The primary force of stars works in this part. In this part only, *Māsa* and *Ṛtu Raśmi*s are present together with many *Chanda* etc. *Prāṇa*.

4. *Asthi* -, various projecting rays present In the above region are like *Asthi*

(bone), which seem to hold the whole star. *Triṣṭup* and *Jagatī Raśmi*s accomplish this task.

5. *Majjā* - The core of the star, which is the repository of various *Prāṇa*s and particles, and is filled with *Jyotirmayī Saṁyojaka Raśmi*s is called as *Majjā* (marrow).

This part is the zone of force and light. In this part, external substances, especially nuclei of Hydrogen, transform into Helium by fusion and release energy. In many stars, Helium etc., also undergo fusion to make bigger nuclei.

This way, a star is made of five types of layers. Here, *Agni* is only the originator and residing place of all illuminated matter and matter having attraction. Even though all-stars are made of mainly *Agni* and *Soma*, when *Soma* becomes similar to *Agni*, the stars begin to form. Various types of particles, which are spread in various parts of a star at distant places, keep travelling towards the intense core of the star. After reaching there, they combine with various *Prāṇa*s to create a variety of materials.

17.3 Five zones of star

Here, we will describe the internal structure of a star differently at a tangible level.

1. *Aindrī* (central part or core) - In this part, the activity of nuclear fusion takes place, then high energy electromagnetic radiations and electrically charged waves are generated. In this region, a powerful electromagnetic force is present. It is the most important part of any star.

2. *Yāmī* - Outside the central part is a small part, in which there is such a mixture of *Agni* and *Vāyu*, which maintains the balance between the central and the outer part. On this part, the two parts slip over. It can be considered as a bearing in a wheel.

3. *Vāruṇī* - It is a small upper part of the bearing in which a paramount state of heat is present. This substance attracts the fusion particles towards the core and throws out various radiations coming from the core.

4. *Saumī* - This is the biggest part of the star, whose radius is almost 75% of the

whole star. In this part, various types of substances are present in the form of ions. From this part only, various particles reach the core, undergo fusion, and transform into various substances. The temperature of this part is the least as compared to other parts.

5. *Ūdhrvā* - It is the outermost periphery of the star, where the high flames of fire continuously rise. Various types of electromagnetic fields are present in this part, whose positions continuously change.

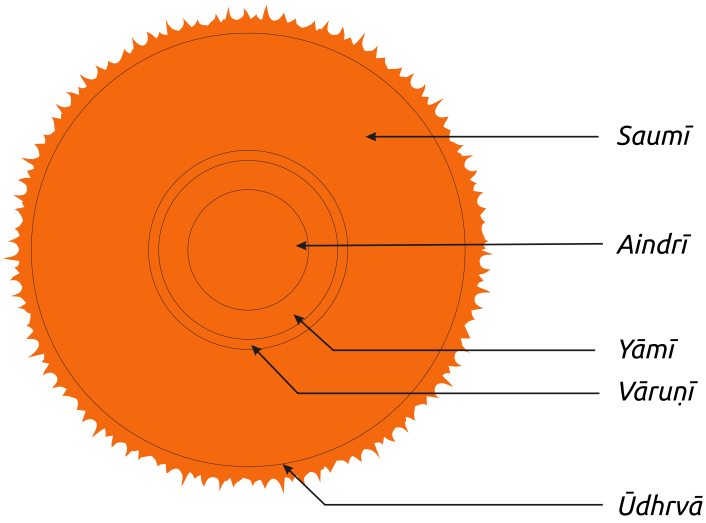

Figure 17.2 Five zones of star

17.4 Five types of forces and matter in the stars

As the compaction of substances happens while the core formation, there is an increase in the gravitational force and electromagnetic forces. The closer the substance is to the core, the forces are more powerful. At that time, primarily there were five types of forces acting inside the stars-

1. Forces acting between *Prāṇa* and subtle *Vāk Raśmi*s
2. Forces acting between various *Chanda Raśmi*s and *Prāṇa*
3. Forces acting between various *Chanda Raśmi*s
4. Electromagnetic force
5. Gravitational force

There are five categories of matter present in the stars-

1. *Prāṇa Raśmi*s
2. *Chanda Raśmi*s
3. *Ākāśa Raśmi*s
4. Electromagnetic waves
5. Various types of particles

These all types of force and matter are hyperactive in the core of the star. At the same time, various types of *Raśmi*s generate high pressure and temperature inside the stars by producing some types of forces. At the same, some other *Raśmi*s control this pressure and temperature, due to this the process of nuclear fusion occurs in an orderly form. Some *Chanda Raśmi*s continuously get transmitted in the core region and ensure the stability of the periphery, due to which the core is remains connected with the other parts while being distinct.

Before we understand the process of the formation of stars, we shall try to understand the mechanism of the generation of energy by interaction of particle and anti-particle. Modern science talks about the formation of quanta by combining particle and anti-particle but does not know about its working mechanism. It is to be noted that various particles and anti-particles are formed much before the formation of stars. However, their combination plays an important role in the formation of the core of the stars under construction. Hence, it is very necessary to understand their mechanism.

17.5 Mechanism of generation of energy by the interaction of particle and anti-particle

A deep science of energy generation by synthesis of particle and anti-particle and outer matter flowing towards the core, in the under-construction cores of nebulae, is presented here. Modern science is silent on why and how energy is formed by the combination of electron and positron, quark and anti-quark. Here that deep science is being disclosed. When a particle and an anti-particle, for example, electron and positron, come close to each other, then the following events occur-

Positrons, dominating *Āgneya* (*Prāṇa*) *Tattva*, are a relatively denser form of *Prāṇa* and are a rarer form of *Marut Raśmi*s, while electrons, dominating *Soma Tattva*, is a rarer form of *Prāṇa* and denser form of *Marut Raśmi*s. When

these two particles come closer, then there is a strong attraction between them.

When the two particles are in the same quantity but have properties of opposite charge and vary in mass etc., attributes too, then these two combines mutually and form a particle that is relatively grosser and bonded. For example, electrons and protons combine to form Hydrogen. Such types of particles cannot be called mutual particle or particle and anti-particle. However, just like electron and positron, particles have the same quantity with opposite charges, and the rest all the properties are the same. Then those particles are known as particle and anti-particle.

The process of the combination of electron and positron is different from that of the process of the combination of electron and proton. When an electron goes closer to the positron, its attraction process is so intense that the two particles thoroughly mix with each other. There is no *Avkāśa* or *Ākāśa Tattva* between them. At that time, the *Marut Raśmi*s of electron and *Dhanañjaya* etc. *Prāṇa Raśmi*s of positron travel at high speed towards each other and mix the entire matter thoroughly. With *Prāṇa, Apāna* and *Vāk Tattva*, such intense and fierce penetration powered *Khadira* waves emanate from *Gāyatrī Chanda Raśmi*s, which entirely covers the synthesized matter of electron and positron or any other particle and anti-particle and transforms it in the form of a photon. This photon has high power and energy. In the absence of these waves, particle and anti-particle can never acquire the form of a photon. When neutron etc. neutral particles combine with their anti-particles, then the force produced due to their anti-rotational movement combines the two. Post that, the process of formation of the photon is the same as above. This way, gamma waves are produced and move out with very high penetrative power. Let us understand this process with the below diagram-

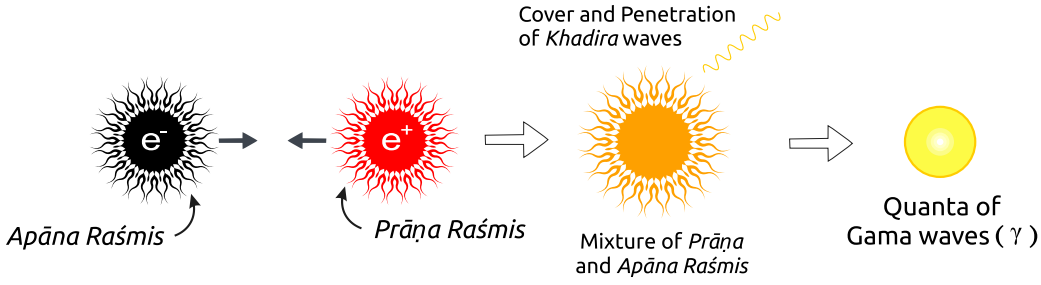

Figure 17.3 Formation of photon by combination of particle and antiparticle

Next, in the entire nebulae, a special type of wave named as *Palāśa* are generated by *Mana*, *Vāk* and *Prāṇa*s. Various types of electrically charged particles originate with their formation. The formation of other larger charged particles occurs with these combining with *Bilva* waves and subtle electrically charged particles. At that same time, minute nuclei begin to form. Due to this reason, the number of electrically charged particles in the nebulae and stars gets increase drastically. The sequence of energy generation from particles and anti-particles stops, and very large-sized electromagnetic fields begin to form. Due to all these, the entire matter glows brilliantly. Any nebula or star is differentiated based on the rays emitted by it. Till now, processes like nuclear fusion unable to start yet. These waves have an impact on the attractive force of nebulae and stars too.

There are two types of energies in the core of the star. First, that has already been generated before the beginning of the nuclear fusion process. This energy is essential to initiate the nuclear fusion process. After that which energy generated by nuclear fusion gets mixed with previously existing energy, and after a specific limit, extra energy is radiated outside the star. A *Gāyatrī Chanda Raśmi* plays a specific role in this task.

The energy generated from nuclear fusion is more intense than the energy present in the star's core. This energy continuously flows into the region of previously existing energy, penetrates that energy, transmits in other parts of the stars, and is released into space. In this entire task, *Raśmi* named *Sāmnī Triṣṭup Chanda* is very useful. It helps in maintaining the balance between the two energies.

Both types of energy present in the star's core keep themselves in control and illuminate every particle. This is the similarity between the two energies. The difference between the two is, the energy produced before the nuclear fusion remains confined to the core of the star and pervades every substance present there, while energy produced by the nuclear fusion not only pervades in the core but also pervades into the entire solar system. A *Gāyatrī Raśmi* plays a significant role in enhancing both these energies.

17.6 Formation of stars

It is a fact that the centres of various galaxies and the stars contained in them are formed after a long and complex process and then are able to acquire fixed

orbit and velocity. It takes millions of years in this entire process and does not happen suddenly by miracle. The bigger the celestial body or the farthest it is from the central star, the more time it will take to stabilize its orbit. All central stars or base stars are bigger in size, temperature, luminosity, and mass than the subordinate stars.

When, in the cosmos, *Agni* and *Soma* material or positively and negatively charged particles are produced everywhere, then at that time in a special area or in the prospective central part, suddenly some *Vajra Raśmi*s are generated, which enhances the energy of negatively or positively charged particles to the extent, that they combine together to transform into energy. Other particles and anti-particles together repeat this process. When this energy begins flowing out of that newly formed central part, that time those *Vajra Raśmi*s too begin moving out with them.

Next, a particle named as '*Manuṣya*', whose speed is irregular, is of low intensity and less lifespan glows by the effect of *Ṛṣi Prāṇa Vajra Raśmi*s and reflects those *Raśmi*s to the core and themselves begin flowing towards the core. How do nebulae originate in the cosmos? How does the vast spread material begin to condense? How does the gravitational force suddenly centralize in one place? Profound answers to such deep questions have been presented here. The space vacated due to the energy radiated, which was formed by the combination of particle and anti-particle, is the reason for attracting the entire material to itself.

In this process, first, their core is formed. The process of formation of the core of the stars happens in many stages. First, the *Ākāśa* at a place begins contracting by subtle *Vidyut* (electricity) and even subtler *Dhanañjaya*, *Vyāna* and *Sūtrātmā Vāyu*. Next, there is little activity in the material present around it, which causes particles to vibrate. In the next step, the attraction process gets increased, and then they are charged due to various *Marut*, *Chanda* and *Prāṇa Raśmi*s and their mutual interaction begin.

The effect of gravitational force slowly increases, and the condensation of material accelerates and due to the gravitational force' pressure, temperature and pressure in that area increase to the extent that various nuclei begin fusing and releasing a tremendous amount of energy. At this time, there is hyperactivity around the under-construction core of the star, and the substances begin flowing very fast towards that central material.

The obstructions of dark energy and dark matter slowly diminish. At that time, intense sound waves are also generated. The material flows from outside in gaseous form like a fast-flowing stream of water goes rapidly towards the core. At the same time, various *Chanda* etc. *Raśmi*s too become intense and begin combining and fusing. In this process, the formation of various types of new particles and waves, and various types of nuclei or molecules by the process of nucleosynthesis takes place at a very fast pace. At this time, due to *Sūtrātmā Vāyu* and *Manas Tattva*, the electricity is hyperactive. Not only nuclear fusion occurs in the core of the stars, but also the compression of various *Chanda Raśmi*s forms various types of elementary particles.

During the formation of stars, the nuclear fusion activities occurring at the core also pass through this process. Different specific high temperature is compulsory for the fusion of various particles in the central region of stars.

If the temperature is below this, nuclear fusion cannot complete or begin in the star's core. On the other hand, if the temperature is higher than required, there could be high radiation pressure due to accelerated nuclear fusion. This can cause a blast in the star. Due to this reason, the cosmos has various categories of stars, which have the fusion of different types of particles in their core, and the temperature and pressure are also different.

Particles in the core of the star or moving towards it absorb a variety of high energy *Raśmi*s. When a star is born inside any cosmic cloud than at first, various *Prāṇa* and *Vāk Raśmi*s having high force combine at the central point or spot. Slowly, that expanding point attracts the cosmic cloud to itself with high speed. Additionally, many *Raśmi*s seep through the cosmic cloud and travel towards that centre point. With time, this part gets heated and gives birth to a star.

17.7 Similarity between particle and star

From an internal structure perspective, any electrically charged particle is similar to a star. However, this similarity is not in totality but partially. In both, the north and south poles behave like magnetic north and south poles, in the eastern part of star and particle, *Prāṇa-Apāna* etc. *Prāthamika Prāṇa Raśmi*s are present in a soft state, while in the southern direction, these *Prāṇa Raśmi*s are highly intense. In the western direction, various *Chanda Raśmi*s with combining forces are present. In the north, such types of *Chanda Raśmi*s are present, due to which that particle displays hyperactivity and withholding capacity.

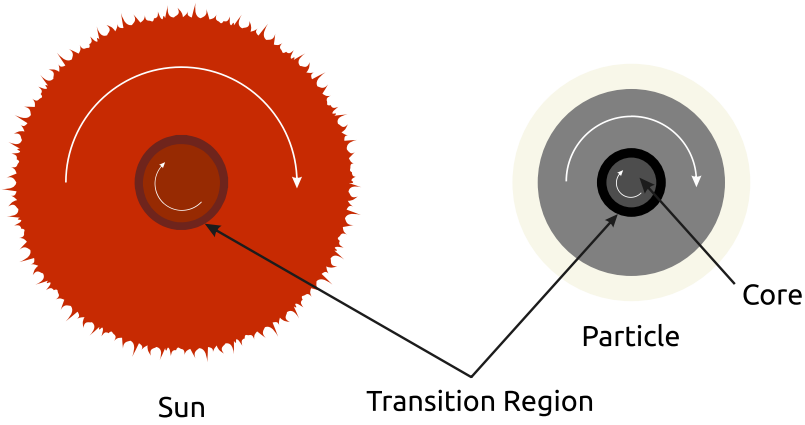

Figure 17.4

In the northern direction of the stars, particles and waves having these properties are present in abundance. The structure of a charged particle is similar to that of the star where, inside the star, between the core having the nuclear fusion process and the remaining large portion lies the transition region (junction region) on which both two parts (core part and outer part) slip. That particle can be an electron or quark. Modern science considers electrons as a cloud of subtle electrically charged particles but is completely unaware of the structure of quark. From the *Vaidic* Science point of view, both particles have a structure similar to that of the star. These also have a junction between the core and the large rest portion, over which the two slip and rotate. This junction is stationary or has a very low speed. This part also has various types of *Raśmi*s, in both particles and stars. The strong force of these *Raśmi*s holds both parts together. The core of both is enriched with various *Prāthamika* and *Marut Raśmi*s.

17.8 The radius of the core of our sun

Maharṣi Aitaraiya Mahīdāsa also describes the measure of radius of the core of sun

sahasramanūcyaṁ svargakāmasya sahasrāśvīne
vā itaḥ svargo lokaḥ

(*Aitareya Brāhmaṇa* 2.17.3)

This means the radius of the core of the sun is 1 *Āśvīna* and the distance between

the earth and the outer part of the sun's core is 1000 *Āśvīna*. This way, the distance between the earth and the centre of the sun is 1001 *Āśvīna*.

i.e. Radius of the core of our sun $R_s = \frac{d_{e \to s}}{1001}$

Here $d_{e \to s}$ = distance of the centre of the sun from the surface of the earth

For example- if the outer part of the sun is approximately 15 crore km from the earth, and the radius of the sun is 6,96,000 km. Then the distance of the centre of the sun from the outer part of the earth is 15,06,96,000 km. From the above formula, the radius of the core of the sun = 1,50,545 km.

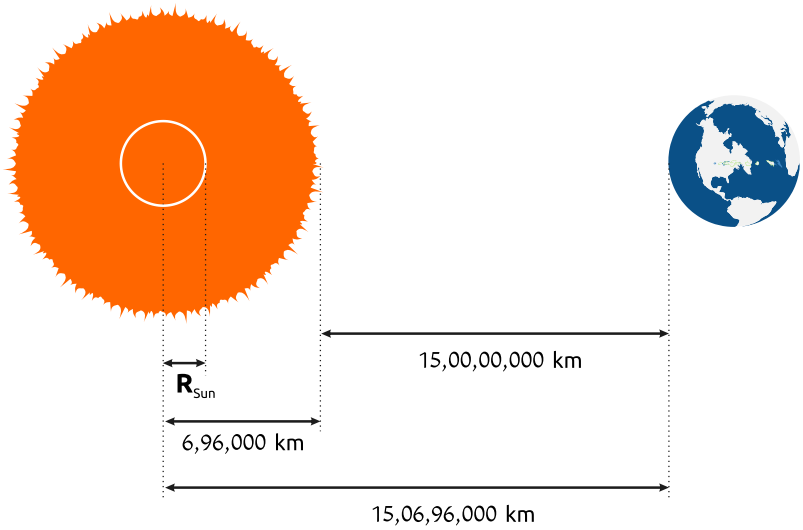

Figure 17.5

17.9 Important 'Heptad' of the Cosmos

There are seven categories of stars in the cosmos. Modern scientists accept various categories of stars. All particles of the cosmos can be divided into seven categories.

1. The entire material of this cosmos is in seven forms viz *Prāthamika Prāṇa*, *Chanda Prāṇa*, *Ākaśa Tattva*, *Vāyu*, *Jala*, *Agni*, and *Pṛthivī*, which are more elaborate and are elementary.

2. There are seven types of galaxies in this cosmos, and modern science should research them.
3. There are seven types of celestial bodies of category like planets, satellites, comets etc.
4. Mainly seven types of *Prāthamika Prāṇa* (*Prāṇa, Apāna, Samāna, Udāna, Vyāna, Sūtrātmā Vāyu and Dhanañjaya*) and *Chanda Prāṇa*s play a primary role in creation, regulation and functioning of all the above celestial bodies.

You learnt in this Chapter

- ✓ Stars have five major parts. The names of those five parts are - *Loma, Tvacā, Māṁsa, Asthi* and *Majjā*.
- ✓ Various types of *Raśmi*s produce different types of forces in the stars and generate high pressure and temperature.
- ✓ Some *Raśmi*s control this pressure and temperature. Due to which the process of nuclear fusion is regulated.
- ✓ Some *Chanda Raśmi*s ensure the stability of the periphery, due to which the core is remains connected with the other parts while being distinct.
- ✓ When two particles have equal but opposite charge and have unequal mass etc. properties, these two combines mutually and form a joint particle that is relatively grosser.
- ✓ When two particles have equal charge and other properties barring opposite charges, are the same, then their attraction is so intense that both particles combine completely and cover the material to provide the form of a photon.
- ✓ When neutron etc. neutral particles combine with their anti-particles, then the force produced due to their anti-rotational movement combines the both.
- ✓ There are two types of energy in the core of the star. First, that is already generated before the nuclear fusion process. The second one is generated by nuclear fusion.

- ✓ The stars are formed after a long and complex process and then can acquire fixed orbit and velocity. It takes lacs of years in this process.
- ✓ The bigger the celestial body or the farthest it is from the central star, the more time it will take to stabilize its orbit.
- ✓ The particle named '*Manuṣya*' has irregular velocity, is of low intensity, and has a small lifespan.
- ✓ The radius of core of sun $R_s = \frac{d_{e \to s}}{1001}$ (Here $d_{e \to s}$ = distance of the centre of the sun from the surface of the earth)

EXERCISES

1. Explain the mechanism of the generation of energy from the combination of particle and anti-particle.
2. What are the two types of energy in the core of the stars?
3. If the distance between the earth's surface and the sun's surface is ten crore km, what will be the radius of the sun's core?
4. What are the five main parts of stars? Explain in detail.
5. From the *Vaidic* Physics perspective, which types of forces act within the stars?
6. What is the similarity between the particles and stars?
7. Based on nuclear fusion, what is the difference between the stars and planets?
8. Explain in detail the process of formation of the core of stars.

❋ ❋ ❋ ❋ ❋

CHAPTER 18

Electromagnetic Waves

During the process of origin of cosmos, the formation of quanta is the first and most important event from the modern science perspective. However, from the *Vaidic* Science perspective, this event happens after many stages; it is an important event. Various electromagnetic waves originate before the formation of stars by compression of various types of *Chanda Raśmi*s. Next, three groups of *Chanda Raśmi*s originate and begin the process of formation of stars. The formation of the three *Chanda Raśmi* groups also happens in a particular sequence. Before the origin of various elementary particles during the formation of the cosmos, electromagnetic waves were formed. Later, various elementary particles are formed from these electromagnetic waves only.

18.1 Categorization of electromagnetic waves

A categorization of electromagnetic waves and charged rays have been described as below-

1. *Kālī* - These are electromagnetic waves that emit white light etc., colours. These rays are visible light waves, wherein modern science believes to have seven colours: violet, indigo, blue, green, yellow, orange, and red. All these combine to give white light and produce black colour when all are absorbed.

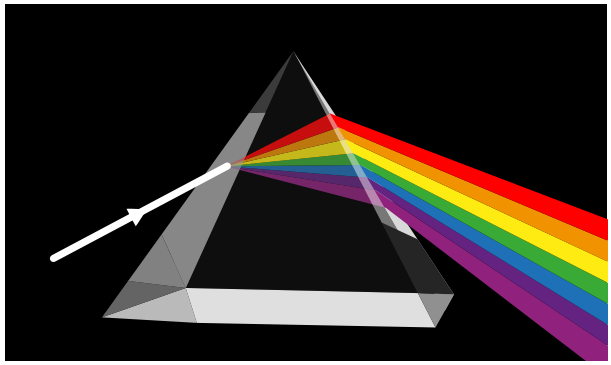

Figure 18.1

2. *Karālī* - These rays have high energy and possess very high penetration power. Gamma rays, especially cosmic gamma rays, can be kept in this category. Other gamma rays and x-rays can also be considered in them.

3. *Manojavā* - Means having a speed similar to *Mana*. We know that *Mana Raśmi*s can travel anywhere unhindered. Any obstruction cannot stop them. The neutrinos coming from the cosmos can be kept in this category.

4. *Sulohitā* - Means beautiful red rays. Earlier, we have learnt about the red coloured visible light rays. In these, we can consider infrared rays. The colour of these rays is also red, but eyes cannot see these. All the colours, despite being luminous and forms, do not come under the category of visible light, due to which it is not possible to see them. However, this does not mean that they do not have any colour.

5. *Sudhūmravarṇā*- Means having beautiful smoke colour. Ultraviolet rays can come in this category. Maybe they are of beautiful violet colour. However, it is not visible because they do not come in the category of visible light. This violet may have a mixture of blue, white, black etc.

6. *Sphuliṁginī* - Means in which various types of particles flow like a wave. In our opinion, electrons, protons etc. electrically charged particles continuously are emitted from any star in space. They also keep generating their light. The beautiful light of these particles in the form of Aurora on earth's north and south poles is well known.

Figure 18.2

7. *Viśvarūpī* - These rays possess a mix of some of the properties of the rays, as mentioned earlier. Radio waves can be considered in this category.

18.2 Three types of very fast-moving material

In this cosmos, three types of material travel very fast and possess illumination.

1. Various *Chanda* and *Prāṇa Raśmi*s
2. Electromagnetic rays
3. Other cosmic radiations

Modern science considers electromagnetic radiation the fastest, but in our view, some *Prāṇa* and *Chanda Raśmi*s are faster than electromagnetic waves. At present, science can neither observe these *Raśmi*s directly nor measure their speed. But it is true that when science becomes more advanced, it can observe the gross effects of *Chanda* and *Prāṇa Raśmi*s. These all materials are covered by a web of subtle *Prāṇa Raśmi*s.

It is this web of *Prāṇa Raśmi*s that provides motion to these radiations and *Raśmi*s and keeps them within limits. Of these, the *Manas Tattva* is completely combined with the most moving *Raśmi*s, while the covering of *Manas Tattva* with *Prāṇa* etc. *Prāthamika Prāṇa*s does not remain completely. *Prāṇa* and *Chanda Raśmi*s both are included in electromagnetic waves. Due to *Dhanañjaya Prāṇa*, its velocity is very high. These three types of material are capable of carrying various subtle particles with them, carrying out combination etc. activity and providing them force and glow.

18.3 Origin of electromagnetic waves

In this cosmos, when *Prāthamika Prāṇa Raśmi*s and *Ākāśa Tattva* compress various types of *Chanda Raśmi*s, then the formation of electromagnetic waves takes place. At first, weak waves are formed, which can be called radio waves. Next, heat and light waves originate, which have a variety of colours. In the end, X-Rays and gamma rays originate, which are very powerful. Their quanta are produced by compression of various *Chanda Raśmi*s by *Prāthamika Prāṇa Raśmi*s and *Ākāśa Tattva*.

All types of quanta propelled by *Dhanañjaya Prāṇa* and are controlled by

*Prāthamika Prāṇa Raśmi*s, mainly *Prāṇa*, *Apāna* and *Udāna Raśmi*s. It is due to these *Dhanañjaya Prāṇa Raśmi*s that electromagnetic rays have high velocity. The energy or frequency of various produced electromagnetic waves depends on by which *Chanda Raśmi*s' compression generates that quanta of those waves. which quanta of waves are generated by the compression of those, and also depends on how that *Chanda Raśmi* group is formed and controlled with *Prāṇa*, *Apāna*, *Udāna* etc. *Raśmi*s.

Modern science classifies visible, heat, ultraviolet, gamma, radio etc. waves based on different frequencies of electromagnetic rays and accepts their innumerable levels. The primary seven colours of visible light, in fact infinite, depending on the frequency of waves. Modern science is not aware of the reason for this frequency variation and formation of quanta. However, *Vaidic* Science goes beyond this to present deep science of the formation of various waves, specially quanta by compression of variety of *Chanda Raśmi*s.

18.4 Mechanism of superposition of waves

Waves and particles travelling in the cosmos follow a stipulated path only. An electron inside an atom or various waves moving in the cosmos do not alter their path after striking other waves. Immediately after the slight interaction of waves to which modern science calls superposition, the waves move in their regular path. If that would not have been the case, then the entire communication system of the cosmos would have collapsed.

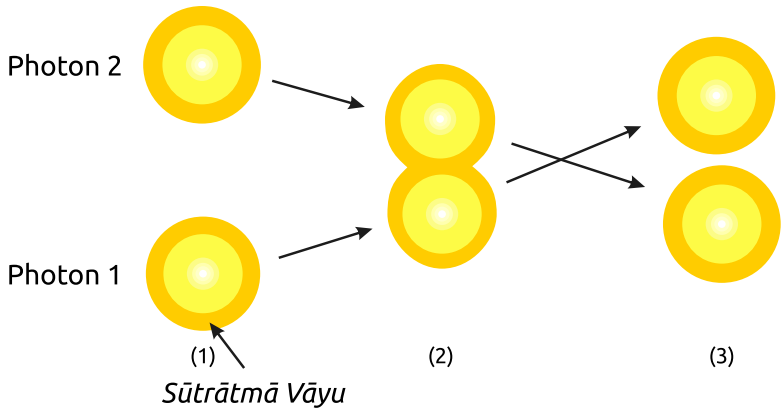

Figure 18.3 Mechanism of Superposition

Due to the obstruction of the light rays, nothing would have been visible, and other disturbances would have occurred. However, due to the orderly work of the almighty *Cetana Tattva*, everyone's path is safe. The reason for this safety is *Sūtrātmā Vāyu* having *Prāṇa Tattva*.

In figure 18.3 image, quanta 1 and quanta 2 is moving in a stipulated direction, as we know that *Sūtrātmā Vāyu* has pervaded both. Along with it, *Sūtrātmā Vāyu* is specifically present in the form of the periphery of the quanta. Both the particles are taken in stipulated direction by *Dhanañjaya Prāṇa*. In position 2, both quanta come very close to each other but do not touch each other. A region of *Sūtrātmā Vāyu* and other some *Prāṇa* maintains some distance in between the two particles, but another envelope of *Sūtrātmā Vāyu* covers the two particles jointly. Due to this reason, the shape of two converts into a combined form for a moment, but their direction is not obstructed due to *Dhanañjaya Prāṇa*. This combined form only is seen as a superposition. Next is the third stage, where both particles regain their original form and direction and move forward without any changes. Hence, it is said that their path is safe. These paths are of infinite distance, and this law works everywhere.

You learnt in this Chapter

- ✓ When *Prāthamika Prāṇa Raśmi*s and *Ākāśa Tattva* (space) compress various types of *Chanda Raśmi*s, then the formation of electromagnetic waves takes place.
- ✓ *Kālī, Karālī, Manojavā, Sulohitā, Sudhūmravarṇā, Sphuliṁginī* and *Viśvarūpī* are the seven categories of electromagnetic and electrically charged rays.
- ✓ Few *Chanda* and *Prāṇa Raśmi*s are faster than electromagnetic waves.
- ✓ Electromagnetic waves have a combination of *Chanda Raśmi*s and *Prāṇa* etc. Due to *Dhanañjaya Prāṇa*, they have high velocity.

- ✓ At first, weak waves are formed, which can be called radio waves. Next, heat and light waves originate, which have a variety of colours. Finally, X-Rays and gamma rays originate, which are very powerful.
- ✓ The energy or frequency of various electromagnetic waves depends on by which Chanda *Raśmi*s' compression generates that quanta of those waves.
- ✓ Particles or quanta traversing in the cosmos travel in the specified and secure path, and the reason for this is *Sūtrātmā Vāyu* having *Prāṇa Tattva*.
- ✓ Due to the envelope of *Sūtrātmā Vāyu*, no two particles can completely touch each other.
- ✓ An envelope of *Sūtrātmā Vāyu* covers the two particles jointly. Due to this reason, the shape of the two converts into a combined form for a moment. This combined form is called superposition in terms of modern physics.

EXERCISES

1. What are the categories of electromagnetic rays? Describe with names.
2. Explain the mechanism of superposition (according to *Vaidic* Physics) with a diagram.
3. Which are the three fastest moving materials? Describe.
4. How are electromagnetic waves formed?
5. In which of the following do the electrically charged particles of electromagnetic waves come
   - **(a)** *Karālī*
   - **(b)** *Sulohitā*
   - **(c)** *Sphuliṁginī*
   - **(d)** *Sudhūmravarṇā*

❋ ❋ ❋ ❋ ❋

CHAPTER 19

Mahāpralaya (Absolute dissolution)

It is an eternal truth that any object that has been created will definitely get destroyed sometimes, it means will disintegrate into the *Kāraṇa* or its cause. This cosmos too will be destroyed one day and it will be absorbed in its original material cause. In this chapter, we will know that how the universe is destroyed.

The elementary particles, photons, *Ākāśa Tattva* (space) and dark matter etc., as known by modern science, present in this cosmos, generally exist for the entire life of the cosmos. Some elementary particles originate and get destroyed, but this process continues during the life of the cosmos as it is. The entire cosmos is made of them, but these elementary particles also originate from *Mana*, *Vāk*, *Prāṇa* etc. material, and this series of cause and effect ends at the fundamental material cause (*Prakṛti*). Usually, the process of creation and destruction goes on continuously in this cosmos. Like, the spread of material due to the explosion of stars, formation of the star at some other place, creation and destruction of planets and satellites, formation and dissolution of so-called elementary particles etc., goes on continuously. Also, the formation and destruction of various plants, bodies of organisms, rivers, mountains, islands, etc., molecules and cells are observed. Despite all these, this entire game happens within and by so-called elementary particles, energy, *Ākāśa*. This game ends at absolute dissolution.

19.1 The continuous cycle of *Sṛṣṭi* and *Pralaya* (formation and destruction)

All activities are a miniature version of formation and destruction that continuously operates like a cycle. Earlier, we have indicated the repulsive force while explaining the attractive force between two particles. There is a time when the process of destruction dominates, especially the activities of destruction dominate. There is a decline in the attractive forces and an increase in repulsive

forces. On the other hand, when the formation of the cosmos begins, only attractive forces are present. Repulsive forces originate at a later stage. The *Gāyatrī Raśmi*s, which were discussed in attraction and construction activities, only with some modification, initiated the process of destruction.

19.2 The process of absolute dissolution

If *Apāna Raśmi*s stay away or separate from *Chanda Raśmi*s, then various *Raśmi*s convert into dark matter and dark energy. When various *Prāṇa Raśmi*s has to be separated from various *Chanda Raśmi*s, then the pairs of *Āsurī Gāyatrī* and *Āsurī Triṣṭup Chanda Raśmi*s are formed, due to which there is a separation of *Prāṇa* and *Chanda Raśmi*s. This causes all *Chanda* etc. *Raśmi*s to detach. The decline of visible matter and the increase of dark matter and dark energy take place. Due to this, derangement starts from the internal structure of various elementary particles, quanta to the structure of large celestial bodies. Slowly those bodies disintegrate. The molecules, atoms, and even subtle particles, and the properties and structure of quanta and particles is disturbed. The nature and properties of the forces change, due to which there is a steady decline of the attractive and holding forces and later are entirely destroyed. At the same time, there is a continuous increase in the repulsive and projectile forces.

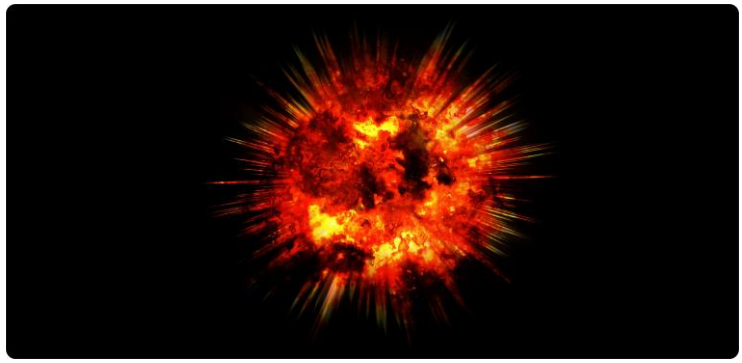

Figure 19.1

These cause the explosion and spread in all objects, from stars, planets, satellites, etc., into subtle particles. In the end, dark matter and dark energy pervade. Due to this, visible matter as well as, the entire dark matter and dark energy also get merged to its cause (*Kāraṇa Bhūta*), the *Manas Tattva*.

In the entire life cycle of the cosmos, the *Manas Tattva* remains in a

specified quantity and is homogeneously present. There is no increase or decrease in it. A large portion of *Manas Tattva* gets converted into dark matter, dark energy, visible matter, and radiations during the formation of the cosmos. During the life of the cosmos, while the *Manas Tattva* compensates for the deficiency of material, on the other hand, it absorbs the extra material within itself too.

The continuous formation and destruction of everything in this cosmos, from the subtlest particles to the heaviest and largest celestial bodies, waves etc., happens by the stimulation of *Manas Tattva* within itself. In the end, this *Manas Tattva* also gets absorbed into the fundamental material cause (*Prakṛti*) together with this entire matter of the cosmos.

In this cosmos, the cycle of construction and destruction goes on continuously. Dark energy tries to obstruct various synthesis processes by its powerful repulsive force. To counter these obstructions, various *Raśmi*s are continuously formed. When the time of absolute dissolution comes, there is an obstruction in these *Raśmi*s. They originate in a haphazard manner, which impairs their binding power. Hence, they are unable to counter the obstructive effects of dark matter and dark energy. This causes the absence of attractive forces between the charged particles, or we can say that charge ends, or it attains neutrality. Those *Raśmi*s that originate the charge lose their effect. Due to this, the formation of various particles stops and destruction begins. To destroy the force between two charged particles, those *Raśmi*s are obstructed, which are responsible for their generation.

When the force between *Prāṇa-Apāna* has to be ceased; when the attractive force acting between photon and electron or the force maintaining stipulated distance between the particles has to be ceased; when the process of absorption and emission of a particle has to be stopped (this causes cessation of emission, absorption and motion of electromagnetic rays, and creates a state of complete darkness in the cosmos); when the radiation form of energy has to be stopped; when their power or frequency has to be extinguished, then their generator, the *Gāyatrī Raśmi*s are disorganized. Due to this, the *Sūtrātmā Vāyu* and *Manas Tattva* working between *Prāṇa* and *Apāna* or *Prāṇa* and *Udāna* become inactive, *Ākāśa Tattva* is separated from between the two combined elementary particles, and the forces end. By this, the effect of the *Raśmi*s, which was supposed to happen, does not happen.

In this cosmos, when the time of absolute dissolution comes or extensive and very powerful destruction occurs in a specific region. Then, some types of *Raśmi*s originate, which separate or destroy the envelope of various *Chanda* etc. *Raśmi*s present around different particles.

These *Raśmi*s destroys those *Raśmi*s too, which help control or destruct the intense repulsive or projectile force of dark energy and help in synthesis activities. Hence, all particles and waves become unsecured and are fragmented by the strike of dark energy. The attractive force of various atoms and elementary particles becomes inactive, spreading various synthesized particles and celestial bodies. The entire cosmos slowly gets absorbed into the original (*Mūla*) equilibrium state, or there is a situation of partial dissolution in a specified region. During the blast of supernovae etc., these *Raśmi*s dominate. These *Raśmi*s are highly explosive.

It should be noted here that the process of absolute dissolution (*Mahāpralaya*) or partial dissolution occurs in a systematic, scientific and phase-wise manner, just as the formation of cosmos takes place in systematic, scientific and phases. Due to this, there is complete control of the supreme conscious entity being in this entire process, and it does not happen randomly.

You learnt in this Chapter

- ✓ An object that is formed in this cosmos will disintegrate into its fundamental cause.
- ✓ A time will come when the attractive forces will decline, and repulsive forces will increase.
- ✓ As the formation of the cosmos begins, only attractive forces are present and repulsive forces originate at a later stage.
- ✓ The *Gāyatrī Raśmi*s, which produce attraction and construction activities, only, with some modification, initiate the destruction process.

- When *Apāna Raśmi*s stay away or separated from *Chanda Raśmi*s, then various *Raśmi*s convert into dark matter and dark energy.
- Towards the end of this cosmos, the *Manas Tattva* also gets absorbed into the fundamental material cause (*Prakṛti*).
- When the time of absolute dissolution comes, then there is an obstruction in the *Raśmi*s. They originate haphazardly. Due to this-
  - They cannot shield the effect of dark energy
  - Attractive forces between charged particles cease
  - The charge is finished or is neutralized
  - *Raśmi*s that originate the charge loses their power.
- The *Gāyatrī Raśmi*s responsible for the generation of various forces, when are disordered, cause the end of forces.
- During the blast of supernovae etc., explosive *Raśmi*s dominate for a brief period.
- The complete process of absolute dissolution occurs in orderly, scientific and phases and does not happen randomly.

EXERCISES

1. What do you understand by *Pralaya* (absolute dissolution)? Explain with example.
2. What is the process of ending the forces between various particles in the cosmos?
3. How does the force between the charged particles end?
4. What is the role of *Asura tattva* and *Asura Ūrjā* in *Pralaya*?

God (supreme conscious) is absolute Truth (*sat*), absolute intelligence (*cit*), is all bliss (*ānanda*). He is formless, omnipotent, just, merciful, unborn, infinite, unchangeable, beginning-less, incomparable, the support of all, the master of all, omnipresent, imminent, immortal, fearless, everyoung, eternal, holy and the maker of all. He alone is worthy of being worshiped.

-Maharṣi Dayānanda Sarasvatī

Difference between Modern science and *Vaidic* Science

#	Modern science	*Vaidic* Science
1.	It started approximately 400 years ago, now at its peak.	It started from the beginning of mankind and was wholly developed till Mahabharat (approx. 5000 years ago) and later declined, now almost extinct.
2.	First, conduct an experiment based on assumption, observe it, and then know about the cosmos.	In *Vaidic* Science, first, know the entire cosmos by *Ūhā* (intuition), Logic and *Samādhi* and later conduct experiments and observations.
3.	Modern science is unable to know the science beyond the limits of its experimental resources.	In *Vaidic* Science, one can know about subtler to subtlest and bigger to biggest material, without any limitations
4.	In modern science, due to developing technology without knowing the materials completely, there are definitely some side effects.	Due to the deep knowledge of materials in *Vaidic* Science, the technique developed on it are completely free from side effects.
5.	The knowledge of modern science is limited only to *Jada* (non-living) objects.	Through *Vaidic* Science, one gets an understanding of *Jada* (non-living) as well as *Cetana* (living) entities.
6.	Modern science is one-sided and makes humans materialistic.	Through *Vaidic* Science, one can learn about spiritualism and materialism and can know about the reality of life and can work for the upliftment of the world
7.	Modern science needs billions of dollars.	*Vaidic* Science needs a clean and pure conscience.
8.	Modern science only tries to answer the ‘how’.	*Vaidic* Science provides the answer of ‘how’ and ‘why’ and ‘for whom’.
9.	Modern science is least concerned about personal, social, national and global problems.	*Vaidic* Science can solve such problems.
10.	Modern science is taking the world towards destruction at an incredible pace.	It is through *Vaidic* Science only that the present world can be saved.

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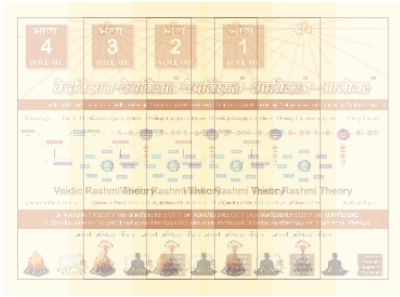

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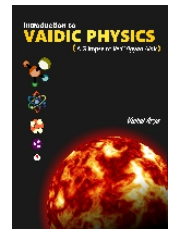

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बोलो! किधर जाओगे ?
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आचार्य अग्निव्रत नैष्ठिक

आचार्य अग्निव्रत नैष्ठिक

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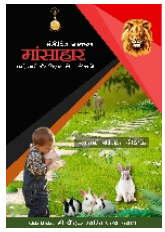

मांसाहार
आचार्य अग्निव्रत नैष्ठिक

विज्ञान क्या है ?
आचार्य अग्निव्रत नैष्ठिक

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Shri Vishal Arya was born in Muzaffarnagar in 1991. His father is *Shri Ch. Yashveer Singh* and his mother is *Smt. Geeta Arya*. He is disciple of *Vaidic* scientist Rev. *Acharya Angivrat Naishthik* and is presently working as an *Upacharya* in Vaidic and Modern Physics Research Centre for approx. six years, where he is researching on *Vaidic* Physics and supporting *Acharya Shri* in reviving the ancient science which is almost extinct. He has completed his Masters in Theoretical Physics with very complex subjects from the prestigious Delhi University of India. Later he qualified GATE and JEST exams with good rank but after watching some videos of *Acharya Shri*, he left the idea of pursuing PhD from renowned institutions and devoted himself completely to the institution for research and promotion of *Vaidic* Physics. He has done an excellent work of editing, compiling and designing the voluminous 2800 pages text *Ved Vigyan Alok* which is the scientific interpretation of *Aitaraiya Brāhmaṇa* (*Brāhmaṇa Grantha* of *Ṛgveda*). By nature he is a hard worker, a devout of *Veda*, Nation, *Ṛṣi*, *Guru*, Mother and Father. *Acharya Shri* has high hopes from him.

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